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# *HISTORY OF NORTH AMERICA*

*Francis Newton Thorpe, Ph. D.*

*Fellow, and Professor (1885–1898) of American Constitutional History. University of Pennsylvania, Editor*

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TERRA COTTA FIGURE FROM THE VALLEY OF MEXICO

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*From original in the Museum of Natural History, New York.*

# THE HISTORY OF NORTH AMERICA

## VOLUME NINETEEN *PREHISTORIC NORTH AMERICA*


BY

W J McGEE, LL. D.

DIRECTOR, SAINT LOUIS PUBLIC MUSEUM;
CHIEF OF THE DEPARTMENT OF ANTHROPOLOGY; FORMERLY ETHNOLOGIST IN CHARGE, BUREAU OF AMERICAN ETHNOLOGY

Author of: *Pleistocene History of Northeastern Iowa*; *Geology of Chesapeake Bay*; *The Lafayette Formation*; *The Potable Waters of Eastern United States*; *Geologic Map of the United States*; *The Siouan Indians*; *Primitive Trephining in Peru*; *The Seri Indians*, etc., etc.

AND

CYRUS THOMAS, PH. D.

ARCHÆOLOGIST IN THE BUREAU OF AMERICAN ETHNOLOGY

Author of: *Study of the Manuscript Troano*; *Notes on Certain Maya and Mexican Manuscripts*; *The Cherokees and Shawnees in Pre-Columbian Times*; *Numerical Systems of the Mexican and Central American Tribes*; *The Mayan Calendar Systems*, etc., etc.



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# EDITOR'S INTRODUCTION

THE present volume, which constitutes the nineteenth in THE HISTORY OF NORTH AMERICA, is the history of culture among the Indians in prehistoric times. It records the development of men on this continent for ages before their existence was known to the civilized races of Europe. It examines the whole field of that ancient culture and runs its lines of investigation into a past perhaps twelve centuries beyond the point at which European and indigenous North American culture met. Vestiges of the Indians of prehistoric times are not uncommon in America. Ever since the discovery of the continent by Europeans the Indian tribes have been the object of speculation, but during the last half century the origin, the migrations, the institutions, the manners and customs of Indian peoples have been studied scientifically. Thus there has accumulated a mass of evidence,—linguistic, ethnological, geographical, archæological, climatic and artistic,—gathered by experts working alone, or under the encouragement of religious bodies, of institutions of learning, and of the Government of the United States, making possible the construction of a narrative which shall unfold the life of the continent during ancient times with all the clearness and authority of its history since the landfall of Columbus.

The development of races of men, whatever be the status of their culture, is the principal theme of all historical study. Culture, as it is exemplified among races of the highest



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development, seems, at first thought, an exclusive possession, and impossible for peoples such as inhabited North America in prehistoric times. Culture and the Indian seem incompatible terms.

But ethnology, linguistics, and archæology correct this error. They make evident that in the evolution of culture there was no break among the inhabitants of North America down to the invasion of the continent by Europeans. That evolution, however sluggish, or, as it may seem to some, abnormal, was nevertheless obedient to the characteristics of the Indian peoples as they were affected by their several environments: for the evolution of this culture went on during long periods of time and amidst extended migrations and the occupation of new sections of the continent. It was an evolution which in its earlier stages takes the mind back to the glacial and neolithic periods, to a time when the continent of North America had not yet assumed the form which we know.

As in the geological history of North America the Appalachian revolution changed the history of the continent, so the invasion of Europeans changed the history of the Indians. The coming of Europeans was a cataclysm in Indian development.

The common notion of prehistoric culture in North America is of architectural remains in Mexico and Central America; of vestiges of the cliff dwellers in Colorado and New Mexico; of tumuli built by so-called mound builders in the Ohio and Mississippi valleys, and of less impressive vestiges in beads and pottery and implements of stone discovered now and then in an Indian grave. But of culture in prehistoric times,—times contemporaneous with the Norman Conquest or the invasion of Britain by Cæsar, only profound students of the subject have any comprehensive thought. Indeed, the idea that any culture then existed, or that the inhabitants of prehistoric North America constituted a racial unit, or that they were developing a civilization under the same general laws of life

which regulate the growth of culture in all ages, has never widely prevailed.

The present volume coördinates the testimony of the ages and narrates the steps in culture taken by the Indians in prehistoric times. It gathers from every reputable source the record, in whatsoever form, of an isolated people, dwelling far away from the seats of culture in the Old World and developing language, industry, art, religion, agriculture, however rudimentary, so as to constitute a distinct phase of human accomplishment,—whatsoever similarity or dissimilarity it may bear to other phases of culture on other continents.

The subject then is itself unique. No other continent affords a like field for exploration. Early man in Asia, in Europe, in Africa, can with difficulty be differentiated, in his culture, because of the contiguity and consequent confusion of cultures. But the Indian of North America presents a different problem. On this continent a various people, constituting a mass of ethnic unities, develop apart from the forces of the Old World. The problem is not one of mere antiquity, or of priority of races, or even of the origin of races. It is a problem of culture development of a part of mankind isolated by location from other parts, and whether autochthonous or not, affording the spectacle of evolution during a long period of time. The problem is strictly scientific and of the highest interest to thinking men.

To the solution of this problem the distinguished authors of the present volume have contributed the first comprehensive, authoritative and interpretative history yet written. Others have written famed and valuable books on aspects of the problem, but the present volume covers the whole field. "It should be borne in mind," the authors write at the opening of Chapter VI., "that one object in view in the plan of treatment of the prehistoric era of North America adopted here is, while noting the culture and presenting the archæological features of this northern continent, to follow

as far as possible, from the indications of the meagre data, the spread of population over it. As this relates to a very remote date in the past the theories in regard thereto must be based on a few fixed landmarks. If it be possible to trace, even in a general way, this process of peopling the various sections, it will afford a means of comparison with the data found along other lines. Archæology assists in confirming the conclusions reached, or helps to check any tendency to wander too far from the proper course. Language and folklore also form parallel lines which assist in making comparisons. We, therefore, continue the plan adopted, proceeding in our investigations from district to district in what seems to have been the direction of the general movement of population and of the lines of development in the past."

Adhering to this plan, the learned authors follow the course of population from district to district over all North America: on the Pacific coast; over the vast area eastward from that coast to the Mississippi valley and the Gulf of Mexico; and over the Atlantic section. They follow the line of that migration in all its multifarious movements, showing its directions and the aspects of its culture from age to age. They place the evidence before the reader, and the conflicting testimony as well, thus enabling him to weigh that testimony and to interpret for himself the status of society which produced it.

The narrative includes the whole story of ancient Indian culture: its art, its industry, its ethics, and its religion. Thus, the reader is put in possession of a standard by which to measure and to judge of the culture of primitive peoples in other continents and at other times. The volume thus becomes a contribution to the general history of man,—a chapter in the history of the evolution of the race.

As one reads the volume, he will be impressed by the mass of evidence which the authors adduce. To their own investigation and study of the field—and they have given their lives to that study—they add the results worked out by

other men; thus, the reader has access to a world-knowledge of the subject, communicated in a comprehensive, scientific, and highly interesting manner.

There were stages or degrees of culture among the Indians, as exemplified in different districts: the Central American district, the Mexican district, the Mississippi valley district, the Atlantic district. Yet these varying cultures attest a common racial stock, a common origin, and probably, had the native development not been arrested by European invasion, a civilization of a distinct type. Perhaps no correction of prevalent misconceptions of the subject is more clear than that the Indians of prehistoric America and the Indians whom Europeans first met, together with all Indians in the historic period, are of the same stock. The Indian peoples throughout their history constitute a racial unit.

This volume, therefore, should be taken in connection with Volume II of THE HISTORY OF NORTH AMERICA, *The Indians in Historic Times;* together they make the record complete. Never before has the record been accessible to all readers, but with these two volumes before him the thoughtful reader may reflect on what is perhaps the strangest spectacle in human history,—the evolution of culture among an isolated, primitive people during long ages, and the sudden contact of that people with European invaders: the whole experience exemplifying the laws of development.

The illustrations distributed through the volume are an effective aid in interpreting the narrative. From the mass of available material that has been selected which, in the judgment of the authors, best enables the reader to form correct notions of the art, the industry, the religion, the agriculture, the architecture, the military affairs, the amusements and the domestic life of the Indians in prehistoric times.

If it be asked, What was the great civilizer in America? the answer is direct and complete: maize. A little reflection suggests the importance of Indian corn in American life to-day, and the grain has never been utilized to the full

extent by white men; yet it constitutes only one of the great foods of our race. In prehistoric North America, maize was the germ out of which culture grew. The student of comparative ethnology will find here a basis of comparisons with other peoples in other continents, as, for example, some of the Asiatic peoples whose great civilizer was rice. But to whatever part of the volume he may turn, the student of ethnology will be attracted by the comprehensiveness of the treatment, the clarity of the statements, the balance of parts, and the simplicity with which the subject, full of difficulties, is presented. The volume must remain for a long time to come a treasury of learning and the authoritative account of the subject of which it treats.

FRANCIS NEWTON THORPE.

# AUTHORS' PREFACE

Because of the meagre and fragmentary character of the data relating thereto, the study of the prehistoric era of North America and also of the entire western continent is beset with numerous and seemingly insolvable problems. The pre-Columbian past of the continent is, so to speak, shut off by a sheer, continuous coast with but few inlets or breaks through which we can gain a glimpse of the interior. The advent of the Northmen, about the time that William the Conqueror was bringing to a close the Anglo-Saxon era, affords the student a brief glance across the northern border. However, it was but momentary and left no lasting impress.

Although the records and histories of the Old World have been diligently sought by students for some indication of pre-Columbian intercourse with or knowledge of the western continent other than that of the Northmen, the search has been in vain. The historian finds no solid ground on which to plant a single footstep; the subject is handed over to the archæologist and antiquary, who must solve the problems, so far as this may be possible, by the internal evidence alone.

There are, however, certain data which may be used as a safe basis on which to rest deductions and to build our theories where breaks occur and facts are wanting with which to bridge them over. These are the conditions found existing on the continent at the time of the discovery by

Columbus and his immediate followers, the chief item of these conditions being the natives. Being fully impressed by this fact, the writers of the volume herewith presented to the reading public, after giving a brief notice of the physical character of North America, present in the second chapter a condensed outline of these conditions as the goal toward which all their investigations and theories must tend, as it is evident that these conditions were the results of the evolutionary activities of the prehistoric past.

Since it is the prevalent opinion that the earliest human population of the Western Hemisphere was introduced from the Old World, and since the discussion of the genesis of the type of mankind inhabiting the American continent hardly falls within the purview of history, this opinion has been accepted. Similarly, the authors have thought it better to express the prevailing opinion that man's appearance in America was postglacial, since this work is not a suitable place for a detailed discussion of the meagre body of archæologic evidence indicating an earlier advent. The intent has been to present briefly the opposing views and then leave in abeyance the question of man's antiquity in America. One chief object in view has been to give in a clear and popular form an outline of the progress, up to the present time, in the investigations and study of the prehistoric era in North America, presenting our own views on the several questions which arise, in regard to which we have reached conclusions satisfactory to ourselves, and also wherever it has been deemed proper to do so.

One result of our study of the data relating to prehistoric America has been our own conviction that physical environment in its broad sense has had more to do in shaping the character of man physically, mentally, and perhaps even morally, than is generally conceded. It is possible that by conceding more in this respect the problem of the advanced culture of Mexico and Central America may be completely solved. One author contends that "advancement is universally based on the conversion of natural food

resources, already known to savage tribes, into an artificial basis of subsistence." This is dependent on physical environment, but there are other influences included under the term which must be taken into consideration. We have proceeded upon the theory that the advanced culture of Mexico and Central America is indigenous, though not denying the possibility of extraneous influence to a limited extent.

To prevent possible misapprehension, a word as to the division of labor between the authors is desirable. The nominally senior author outlined the work, aided in assembling the material, discussed the plan and scope and many of the points involved, and coöperated in revising proofs; while the nominally junior author is responsible for details of arrangement, form of expression, and other features of authorial labor. Special students acquainted with the views, methods, and styles of the two authors will doubtless find it easy to form a correct judgment as to their respective shares in the joint production.

W J McGee,
Cyrus Thomas.

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*PREHISTORIC NORTH AMERICA*

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McGEE—THOMAS




# CHAPTER I

## *NORTH AMERICA—ITS PHYSICAL CHARACTERISTICS*

As PHYSICAL environment is known to have an important bearing on the development of both the physical and mental qualities of man, as well as upon his habits, customs, arts, and even his beliefs, it will be appropriate before entering upon the study of the prehistoric past of North America to devote a chapter to its physical characteristics, with special reference to their bearing on the human population.

Dr. Shaler has remarked (*United States of America*, i, 1, 1897), that "Whatever be the nature or capacities of a people, however fortunate they may have been in the inheritances from their forefathers in other countries, their fate is, in a great measure, determined by the nature of the fields in which they come finally to dwell. We all recognize, more or less clearly, how our individual lives are shaped, how all our activities are ordered by the circumstances of the soil, climate, or under-earth resources of the region in which our lot is cast; success or failure may be determined by those features of environment. That which is true of the individual is true also of peoples or states."

Although Dr. Shaler makes the physical environment play rather too prominent a rôle in individual life, the general purport of his language is certainly correct. Environment, if we include all that may be properly embraced under that term, does have much,—yes, very much to do in forming the characteristics and customs of a people.

It must be understood, however, that environment as here used includes not only the geographic (topographic, geologic, and hydrographic) features, but also the flora and fauna, the latitude and meteorology, in fact everything physical that can have any bearing on the life, character, and customs of mankind. That environment thus defined plays a very important rôle in the formation of the physical and mental characteristics of the race, or people, is admitted by all anthropologists; but the recent study of the subject seems to be leading toward the conclusion that this influence is even more pronounced than has generally been supposed. There is little doubt that the characteristics of the Indian race or sub-race in America are due—so far as peculiar—to the physical conditions of the American continent.

Brinton seemed to be of the opinion that this race characterization took place during a certain era of the past, and in a certain limited area of North America, and that being once impressed, the essential peculiarities remained. However, such a theory is liable to the objection that the race characteristics of the first immigrants should have remained unchanged, or if subject to change under the influence of environment there was liability of change when the area of characterization was abandoned, and habitats sought in areas with different physical conditions. On the other hand Virchow (*Cong. Americanistes*, 360, 1888) concludes from an examination of the cranial forms of American aborigines that it is impossible to formulate a type "universal and common to the American indigines." Notwithstanding these varying opinions there can be no longer any doubt that Shaler is substantially correct in the statement quoted above. Our first step, therefore, in the effort to trace briefly the prehistoric times of North America should begin with a short account of the physical characteristics of that continent.

We notice first that it lies wholly in the northern hemisphere, and that with South America the two form an

isolated body of land, or, in other words, a continent separated by the oceans from other continents or large bodies of land. Although this isolation by intervening bodies of water forms comparatively little interference with intercourse at the present day between the continents, it was a serious obstacle to intercourse in the prehistoric era. For thousands of years after the higher culture had been reached by nations of the Old World, America appears to have remained unknown to the people of that world, at least historians and antiquaries have ransacked in vain the literature of the past in search of evidence of the knowledge of this western continent previous to the coming of the Northmen. Nor did these bold adventurers gain more than a brief glance at the continent proper before they abandoned it. After which, another period of darkness shut out its shores for more than three centuries. Had the ancient people of northeastern Asia and of the South Sea Islands made permanent records of the chief events in their histories, it is possible that we should know much more of the prehistoric times of our continent than will ever be brought to light by the most diligent research. The isolation of our continent is therefore an item to be considered in studying the bearing of physical influence on the history of the aboriginal population.

Although North America lies wholly in the northern hemisphere, it stretches north and south from the arctic zone nearly to the middle line of the tropical zone, from the land of perpetual ice and snow to the land of perpetual summer. Like South America and Africa, it is one of those triangular continental forms in which the wide parts are toward the north and tapering toward the southern extremity. Africa and South America lie almost wholly in the southern hemisphere, each with a wide, open ocean space to the east and west, but North America lies wholly in the northern hemisphere, having its widest parts in the arctic and north temperate zones. Therefore, while the southern narrowing portions have a wide ocean expanse on each

side, the broader parts at and near the northern extremity approach on each side much nearer to the eastern continent. The Pacific shores of the two continents converge until at Bering Strait they are separated by only about sixty miles of shallow sea, which in the summer season an Eskimo Indian can safely cross in his frail vessel. The water divide on the Atlantic side is much broader, but there are islands along the northern route, reducing the widest interspace to five hundred miles. Thus, while the Old and New World coasts are tolerably near neighbors in their circumpolar parts, they are widely separated from one another throughout the greater portion of their shore lines.

"While from the point of view of human interest it must be deemed fortunate that our continent [North America] is so placed that it lies mainly in high latitudes, its position brings with it certain grave disadvantages. A large part of its area is exposed to a climate so rigorous as to make it unfit for the uses of civilized man, for it is placed so near the pole as to prevent the important food-producing plants from ripening. In this manner a portion of the area of the Canadian Dominion is, in the present condition of the world's climates, as unfit for the use of the civilized races as is the region of the Sahara."—(Shaler.) This author, it must be remembered, limits the land areas adapted to the use of civilized races, to those where agriculture can be carried on as a means of providing a food supply, and though not so stating seems to limit the agricultural area to the regions where maize can be grown. He excludes from this category nearly all the continent lying "north of a line extending from southeastern Labrador in a westerly direction to near the head of Lake Superior; thence northwardly to the southern end of Lake Athabasca; thence southwesterly to the mouth of Frazer River on the Pacific coast," thus placing nearly one-fourth of the area of the continent in the class unfitted for civilized life. This probably excludes too large a portion, and fails to take into consideration the northern extension of agriculture

under the process of adaptation by developing hardy varieties, and the selection of new food plants.

Another important feature of this northern continent is its mountain systems. One, which is the most important and most extensive, is the great mountain range running nearly parallel with the Pacific coast from Alaska, through the western part of British Columbia, and thence southward to the Isthmus of Panama, known as the Rocky Mountains north of Mexico, while in the latter republic the name "Sierra Madre" is applied to the chief range. However, the different sections of the great dividing ridge which separates the drainage areas of the two oceans present important differences. In the United States the range expands in width so that in the latitude of Colorado it spreads from Denver to Salt Lake City, forming a broad elevated plateau from four to ten thousand feet in height. This elevated plateau is broken into ridges generally trending north and south, with intervening valleys and plains, the chief and, in fact, only well-marked exception to this rule is the Uinta range of Utah and Wyoming.

It is usual among the more recent geographers to consider the whole great mountain region, or Cordilleras collectively, as a vast elevated plateau which, occupying the greater portion of the width of Mexico from ocean to gulf, enters the United States with a great breadth extending from the eastern face of the Rocky Mountain range westward nearly to the Pacific coast. Thus considered it includes, besides the chief dividing range, also the Sierra Nevada and its northern continuation, the Cascade range, through the central parts of Oregon and Washington, and thence through British America to high latitudes. The highest points of these ranges are in Colorado and California, as Long's Peak, 14,271 feet; Gray's Peak, 14,341 feet; Pike's Peak, 14,108 feet, and others in the former State; and Fisherman Peak, 14,448 feet; Mount Whitney, 14,898 feet, and Mount Shasta, 14,380 feet, in the latter State. Northward in British Columbia the system is not

so high nor so broad as further south, but following the coast around through Alaska it rises in broken groups and ranges, sometimes to a great height, culminating in Mount McKinley, north of the head of Cook Inlet, 20,464 feet, the highest point in North America. Another elevated point is Mount St. Elias, 18,100 feet, on the boundary between British Columbia and Alaska. There is also the Coast range, which hugs somewhat closely the shore line in California and southward to the extremity of the peninsula of Lower California.

In Mexico, which, with the exception of the peninsula of Yucatan and a narrow border on each coast, lies entirely, or very nearly so, in the Cordilleran system, the elevation of the plateau ranges from 4,000 to 7,000 feet in height. The chief elevated points are Popocatapetl, 17,520 feet, Orizaba, 18,250 feet, and Iztaccihuatl, 16,960 feet. In Central America the Cordillera is represented by detached ranges of high hills covering the greater part of the narrowing area as it approaches the isthmus, in which there are numerous volcanic peaks, some extinct, others active.

On the eastern side of the continent, extending northeast from the northern part of Georgia and Alabama to the vicinity of the mouth of St. Lawrence River, and generally parallel to the Atlantic coast, is the Appalachian mountain system. In magnitude, height, and length it is far inferior to the western Cordilleran system. The numerous ranges and ridges of which it is composed conform somewhat closely to the general trend of the system. The structure of the several ranges is varied. In Pennsylvania and thence southward the system consists of three members clearly distinguishable one from the other: the Blue Ridge, the Appalachian valley, and the Cumberland-Alleghany plateau. The Blue Ridge, or eastern range, extends from Pennsylvania to Georgia. Scarcely reaching a thousand feet in height in the former State, it increases as it passes into and through Virginia, so that at the point where it is cut by Potomac River its height is 1,500 feet, and at the Peaks

of Otter it has reached an elevation of 4,000 feet. In western North Carolina the form becomes more broken and irregular, though the general trend of the various parts conforms to that of the system. Here are found mountains exceeding 6,000 feet in height; as Mount Mitchell, with an elevation of 6,711 feet; and Roan Mountain, whose broad summit is 6,300 feet above the sea level. In the northern section the line of elevations includes the Green and White Mountains of Vermont and New Hampshire, and the Adirondacks of New York, all of which differ more or less in their geological structure from the central and southern portions of the system.

Between these two ranges stretches a broad basin, nearly level, drained by Mississippi River, the Great Lake series, the Saskatchewan, and Red River of the North. Thus it is seen that the principal topographical features north of Mexico are comparatively simple: two great mountain ranges parallel to the opposite coast, and an intermediate basin. Although we can readily imagine the effect on travel, intercourse, commercial exchange, as well as the climatic effect and bearing on the food supply that these great mountain ranges would have on a population knowing nothing of steam power, or of beasts of burden, yet their full effect will not appear until the intermediate areas and other physical features have been described.

The broad intermediate basin, through the middle line of which runs Mississippi River, the main drainage channel, descends gradually and generally regularly toward this middle channel from the base of the range on each side. Notwithstanding the general topographical uniformity of this area, there are differences in the sections which had in the past a most important bearing on the distribution, migrations, and intercourse of the aboriginal population. The greater portion of the area is drained by the Mississippi and its great branches, Missouri, Ohio, Arkansas, and Red Rivers, and other affluents, and other minor streams falling into the Gulf of Mexico. The northern portion is drained in part

to the Atlantic by the chain of Great Lakes and the St. Lawrence, and partly to Hudson Bay by Red River of the North, the Saskatchewan, and other streams. The Mississippi and Red River of the North form the dividing line between the eastern and western divisions of the great basin. The eastern portion, though generally level, is broken at some points by rather low hills; it is well watered, and with the exception of the prairie section, chiefly in Illinois and some adjacent States, was, before the white man's ax entered the region, generally covered by forests, and is throughout well adapted to agricultural purposes.

The western portion of the basin, which is drained by the Missouri, Arkansas, Red, and some other streams, most of which fall into the Mississippi, must, so far as its relation to man is concerned, be considered in two sections. The first is a broad strip including the first tier and the eastern portion of the second tier of States on the west of the Mississippi, partly covered with forests, especially the southern portion, and partly prairie land, and suitable for cultivation.

The remainder of this western portion consists chiefly of what are generally known as the Great Plains. These, as a general rule, to which there are exceptions, rise to the west by a long, gentle incline to the base of the Rocky Mountains or eastern range of the Cordilleras. The surface is a monotonous, rolling, treeless expanse; the stream beds are but slightly below the general level, and the intermediate areas are indicated only by broad swells in the surface. The landscape resembles the ocean expanse, where there are no landmarks to guide the traveller who is away from the travelled routes. About latitude forty-four the monotony is broken by the group of low mountains known as the Black Hills, in South Dakota. South of Canadian River, the Llano Estacado, or "staked plain," is a great, waterless, well-grassed tableland, having an elevation of some three thousand to five thousand feet above the sea. No streams flow across it, though it is skirted along its western border by Pécos River. There are but few points in this great

treeless belt in which the rainfall is sufficient for agricultural purposes.

This vast belt of treeless plains extending north and south from the Rio Grande to the Saskatchewan played a much more important rôle in prehistoric times than the Appalachian range or even the Great Cordilleras. The influence of these plains on the aboriginal population in prehistoric and also historic times has not been properly appreciated by scientists. Not only is it largely the boundary between faunal and floral groups, but, as will appear in a subsequent chapter, was the dividing line between the two great ethnological, cultural, and archæological divisions of the continent. It seems from all the data, traditional, archæological, and linguistic, which have been obtained that it was almost a complete barrier to transverse movements, that there were no lines of migration across it. Yet there were tribes in prehistoric times which made this treeless area their home, following the buffalo herds in their seasonal movements north and south. When, after the advent of Europeans, horses came into use, the ancient rule was changed and the natives driven westward by the pressure of the increasing white population made this region their habitat.

Included in Utah and Nevada is an extensive area enclosed by ranges and divides which prevent its surface waters from being discharged seaward. This interior plateau, which embraces most of these two States, is known among geographers as the Great Basin, in the sense of "closed basin." The streams, however, of the southern and southeastern districts of Utah find their way to Colorado River. Those of the centre and north belong to the closed depressions of Lake Sevier and Great Salt Lake, survivals of the so-called Lake Bonneville, which spread over a large portion of the Great Basin in a former geological age and discharged its overflow into the Columbia. The region is mostly treeless and receives a scant rainfall, which is not sufficient to supply the demands of agriculture; nevertheless, here, as in the greater portion of this Cordilleran region, the arid lands,

if supplied with sufficient water, return rich harvests to the husbandman. In the basin, the cultivable areas are confined chiefly to a narrow zone skirting the foot of the Wasatch range, which can be irrigated by freshwater streams flowing from the upland valleys.

The vast region including New Mexico, Arizona, and the adjoining section of Mexico is a treeless plateau, yet differing in character from the great plains between the Rocky Mountains and the Mississippi. It is an arid region, the only arable areas being those bordering the few streams, as the Rio Grande, Pécos, Colorado, and tributaries, where irrigation is possible. The surface is largely broken into level-topped mesas and deep arroyas and cañons. It is in this region that we find the great Colorado cañon and its branches, where the stream at some points flows through a fissure over two thousand feet in depth. The prodigious dimensions of the eroded chasms, the architectural arrangement of the stratified rocks, and other strange and even fantastic features, have excited the admiration and wonder of the geologists engaged in the study of this region. The somewhat peculiar physical features of this section, as will be seen in a following chapter, have had much to do in shaping the customs and activities of the native population.

West of the Colorado, in the extreme southeastern portion of California and extending into the western border of Arizona is perhaps the most desert region of the entire continent, which is known generally as Death Valley, because of the number of persons who have miserably perished there from thirst. Parts of this valley, which lies between two ranges, known as the Amargosa and Panamint Mountains, descend to a depth of one hundred and fifty feet below sea level. There is no water or vegetation in the whole valley, nothing but bare rock and shifting sand, save a few scattered cacti and a little stunted sage. In summer the sun's intense rays pouring down on the bare rocks make the heat intolerable.

If we examine a topographic map covering the southwestern part of the United States and the northern portion of Mexico, we notice that the broad area referred to in the two preceding paragraphs, which ranges in elevation from sea level to six thousand feet, extends southward for a considerable distance into the latter republic. The lower level —zero to three thousand feet—extends from the Death Valley through Arizona, and southward through and including a broad coast section in Sonora. The second level—three thousand to six thousand feet—including central and southern New Mexico and southeastern Arizona, extends, in a broad belt embracing the Rio Grande valley, southward through Chihuahua into and over a large portion of Zacatecas, Mexico. The basin of northern Mexico known as Bolson de Mapimi is situated in the southern extension of this area.

The geological features which include the under-surface material, as metal ores, coal, oil, etc., have had a remarkable bearing on the life, customs, and activities of the white races who have colonized and largely overspread the continent since the discovery, yet they played but a minor rôle in shaping conditions in the prehistoric era. Although the later geologic changes which brought about the present physical conditions of the continent have had an important bearing on human life since man's advent thereon, the details necessary to make apparent this bearing would require more space than our limits permit; we therefore omit further notice of this topic than a brief reference to the glacial epoch.

Long prior to the furthest reach of history or tradition, yet comparatively recent in the geologic time count, the northern part of North America was buried under a vast sheet of ice and snow. A great glacier pushed its way southward enveloping most of Canada and the northern part of the United States in its icy grasp. The origin, or cause of this climatic change, or perhaps more correctly these changes, for it is now generally conceded that there were two if not more of these icy invasions, is a problem which

geologists have, as yet, failed to account for satisfactorily; nevertheless, the facts are no longer questioned. The traces of this ice invasion are found all over New England and New York, over the greater portions of Ohio, Indiana, Illinois, Iowa, and Nebraska, over the Dakotas as far west as Missouri River and northern Montana, and the sections north of this belt. The work of this great continental glacier consisted, in addition to the effect of the cold on animal and vegetable life, in erosion and deposition. Toward and along the Canada border the work was chiefly erosion, as shown by the unmistakable marks left in this region. On the other hand, toward the southern limit of glacial extension, the evidence of its action is found in the terminal moraines, some of them of great extent and all of them complicated and irregular. The age of this epoch has been estimated by thousands and hundreds of thousand years, during which, according to the belief of some anthropologists, man existed on this continent. The estimates of the time since the close of this cold era vary widely, reaching from seven thousand to a hundred thousand or more years, though American geologists seem disposed to fix the most probable limits of the disappearance of the ice gorge from Niagara between seven and twenty thousand years.

It is not difficult to imagine the effect of this vast ice sheet and low temperature upon animal and vegetable life. It is evident, as the cold era continued for tens of thousands and, as is claimed, a hundred thousand years, that vegetable life was destroyed, so far as the ice sheet extended, and that the species of land animals which failed to move southward in advance of the glacier were also destroyed. It seems strange to us that there was a time when the musk-ox, white bear, and Arctic fox had their homes in Pennsylvania, Ohio and Illinois.

However, it is chiefly to postglacial conditions that we desire to call attention; of these the hydrographic features, which are on a grand scale, had an important bearing in the distribution of population and the intercourse between tribes

and peoples. The river systems are extensive. The Mississippi, which forms the central drainage channel of the United States from near the northern international boundary to the Gulf of Mexico, with a long tributary rising in the Rocky Mountains of Montana, drains a million and a quarter square miles, and its length, counting the longest branch, is over four thousand miles. The St. Lawrence and the chain of lakes which it drains, together with its tributary, the Ottawa, probably formed in prehistoric times one of the most important lines of trade and travel in the eastern half of North America. Other important streams were the Mackenzie, which forms an outlet for the lakes and a drainage system of northwestern British America; the Columbia, the chief drainage system of the Cordilleran area of Wyoming, Idaho, and Oregon; the Rio Grande and the Colorado of the southwestern section.

At two points only of the coast of North America does the sea encroach far into the continent. Hudson Bay cuts deeply into it from the north, but its entrance is so far north that icebergs render navigation difficult. What part it played in the prehistoric drama is unknown; however, if certain theories in regard to the early movements of population, especially the Eskimo, be correct, it may have been more important than Ratzel (*Hist. Mankind*, ii, 1, 1897) surmised. The more important sea indentation is the Gulf of Mexico, which forms the American Mediterranean, into which the waters of the great Mississippi basin are poured. This great water indentation, which is divided from the Atlantic by the Florida peninsula, and from the Caribbean Sea by the island of Cuba and the peninsula of Yucatan, is really an inland sea; and in the tropical locality in which it lies is always open to commerce.

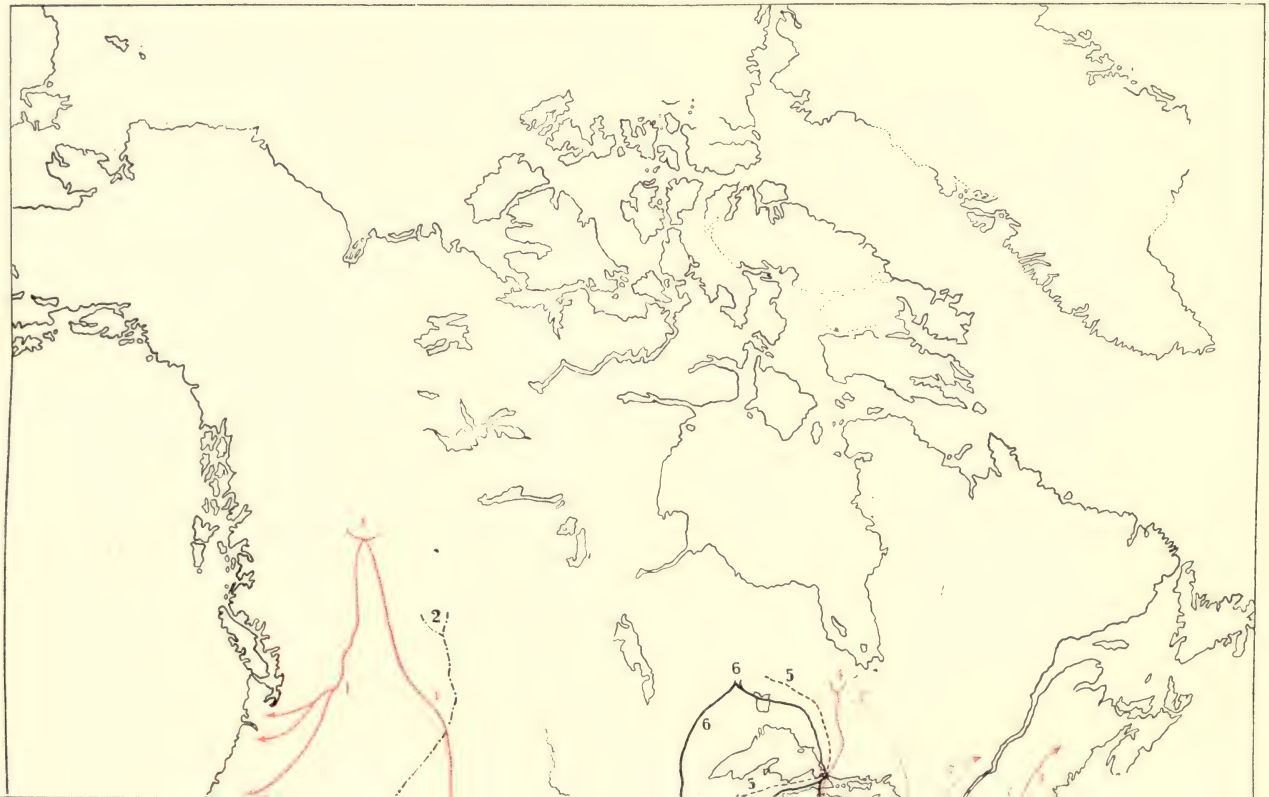
The geographical position of North America, its longer diameter being from north to south, extending from the arctic regions to the tropics, produces belts of climate varying according to latitude from the icy cold of the extreme north to the burning heat of the tropical zone, modified to

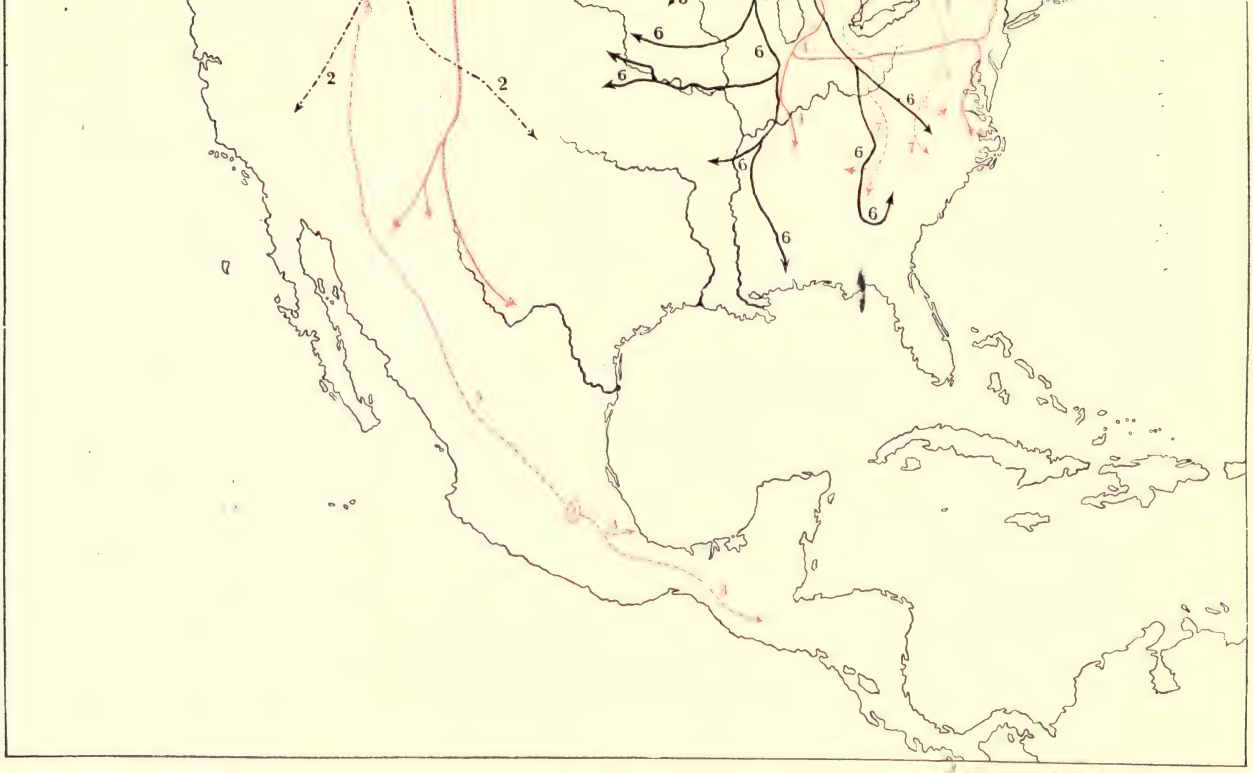
a greater or less extent by the topographical features, the prevailing winds, degree of moisture, and on the coastal regions by the ocean currents. However, in consequence of the expansion in the middle and northern sections and rapid diminution in width toward its southern extremity, the greater portion of the area belongs to the temperate and cold climatic belts. Although lying to a large extent in substantially the same latitudes as Europe, the climates in the corresponding latitudes vary considerably in the two continents. The variations in seasonal temperature are greater in North America than in Europe. The peculiar feature of the winter and summer seasons in the former is found in the sharp contrast of temperature which they exhibit. In some sections of the interior, as the northwest, the variation from the extreme heat of summer to the extreme cold of winter sometimes amounts to as much as one hundred and twenty degrees Fahrenheit, or in other words the heat, for a few days in summer, is as great as at Calcutta, and in winter, for short periods, the cold is as severe as in Russia. In general, North America has, within and east of the Cordilleras, a temperature ten degrees lower than in the same latitude in western Europe. On the contrary, the Pacific coast climate is as mild as the western portions of Europe, and in southern California is similar to that of Italy.

Owing to its geographical position, and the chain of mountains which extends from one extremity of the country to the other, Mexico possesses almost every climate. Hence, it has been customary from an early date to divide it, not by latitude, but by altitude, into three regions—the warm lands, the temperate lands, and the cold lands. The warm or hot lands, which extend in a comparatively narrow strip along the Atlantic and Pacific coasts, rise from sea level to an elevation not exceeding one thousand feet. Of great fertility, and in part covered with venerable forests, the warm lands, though not attractive to the aboriginal population, especially in the southern moister sections, supply modern commerce with tropical woods, fruits, cotton,

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Map showing migrations of principal stocks: 1. Athapascan; 2. Shoshonean; 3 Nahuatlan; 4. Lenni Lenape; 5. Chippewa; 6. Siouan; 7. Iroquoian. *Prepared under direction of Professor Thomas.*

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sugar, and numerous other products; but it is here that yellow fever prevails during the heat of summer, and forms a serious drawback to the development of the section. The average temperature of the warm lands is seventy-nine degrees Fahrenheit.

Above this region, on the first plateau of the Cordilleras, at a general elevation of four thousand feet is the zone known as the temperate lands, where extreme heat and extreme cold are equally rare, and where the rays of the sun are mild and the winds soft and lukewarm. The thermometer ranges within narrow limits, about sixty-eight to seventy degrees. Orizaba, Cordova, and Jalapa are spoken of by travellers as veritable Mexican paradises, and as renowned for their healthful climate. The cold lands comprise the plateaus elevated more than seven thousand feet above the sea level, where the mean temperature is sixty-three degrees.

The rainfall differs widely in different parts of North America. North of Mexico, where the mean annual precipitation is nearly thirty inches, some portions of the country enjoy an almost tropic abundance, while in other parts it is so scanty that these regions are real deserts. It may be said in general terms of the regions north of Mexico that, from the one-hundredth meridian east to the Atlantic, the rainfall is usually sufficient for the profitable cultivation of the soil. Over most of this section the annual precipitation is on the average greater than that which falls in those parts of Europe which have the greatest fertility, and the distribution of the rain as regards the seasons is generally favorable to the needs of the agriculturist. Although droughts occasionally damage particular sections of this eastern area, it has never happened, since the country was occupied by Europeans, that the lack of rain has endangered national prosperity. We may judge from this fact, and from the further fact that in the prehistoric era, before the forests were disturbed by the white man's ax, the rain distribution was more regular than since the introduction of

the white population. Although the rainfall over most of the area west of the one-hundredth meridian is insufficient to supply the amount of moisture needed for the profitable cultivation of the soil,—except where it can be applied by irrigation,—there are one or two narrow belts near the Pacific coast of the United States and British America where it is more abundant.

If we examine a map of the United States showing the distribution of the mean annual rainfall, it will be seen that those parts of the country enjoying the greatest amount lie immediately on the coast of the Gulf of Mexico and on the northwest coast of the Pacific. In the Mississippi valley the annual rainfall diminishes gradually northward toward the Great Lakes, and westward up the slope of the Great Plains. On the Gulf coast it exceeds sixty inches, on the Atlantic coast it ranges from forty to fifty inches, while about the Great Lakes it does not exceed thirty inches. To the westward, at the eastern base of the Rocky Mountains, it ranges from ten to twenty inches. The Cordillera region, as already stated, is comparatively arid. Those areas having the least rainfall, and consequently approaching most nearly the true desert type, are the plateau region of Arizona and Utah, the Great Basin of Utah, Nevada and southern California, and the southern portions of Arizona and New Mexico and the northwestern portions of Mexico. In these regions the annual precipitation is ordinarily less than ten inches, and in some localities is almost entirely wanting.

Although North America contains some of the grandest forests of the world, including many species of trees which afford useful material for man's requirements, it has a larger area of fertile lands which are unprovided with timber than any of the other continents, except Asia. These areas are known as prairies, as those of Illinois, Iowa, and other Western States, and, though devoid of forest growth, have a rich and productive soil, and are, before invaded by the plow, covered by a heavy growth of grass and minor plants. In the forests of North America, according to Sargent, there

are four hundred and twelve arborescent species. Of these, two hundred and ninety-two belong to the Atlantic section, and one hundred and fifty-three to the Pacific section, while ten cross the continent.

The southern portion of North America, from the Isthmus of Panama northward to central Mexico, is occupied by forests of a tropical character, which are altogether different from those of the temperate latitudes. These forests extend along the coast lines of Mexico to near the border of the United States. North of the tropical forests the massive woods of North America are "divided into two great coastal areas which circle about the vast, relatively open country which lies to the west of the Mississippi and extends thence to near the Pacific coast. North of the United States, these woods of the east and west develop farther inland, and in the region about Lake Winnipeg the cooler and moister climate enables the forest to cover the whole land and extend northward thence to the part of the continent where the trees are stunted or their life rendered impossible by the brevity of the summer."—(Shaler, in *The United States of America*, 1897.)

Professor Sargent, in his report on the forests of North America in the publication of the Tenth Census, 1884, says that for the region north of Mexico, the forests of the two great sections, the Atlantic and the Pacific, differ as widely in natural features, composition, and distribution, as the climate and topography of the one section differ from the climate and topography of the other section. Our space will not permit us to mention in detail these differences; but there is one item not often alluded to by those writing on this subject, which, though not of so great bearing on Indian life, is of much importance in its bearing on the industries of the white population; this is the almost utter lack of the so-called "hard wood," in the western section. Or, as Dr. Shaler expresses it, none of the deciduous trees of the Pacific coast area "have much value for construction purposes. Their woods lack the strength requisite

for use in the manufacture of agricultural implements or wagon wheels."

The flora and fauna of America may truly be said to be richly developed, yet they have supplied fewer cultivable plants and domestic animals than the Old World. Maize, potatoes, sweet potatoes, tobacco, cacao, and maté are the chief native plants which have acquired importance for mankind. There are, however, numerous other species which have been useful as food or for other purposes to the Indians which are of no great value to the whites of to-day. The seeds, fruits, berries, and roots of many plants were used in various ways as food, and must, before maize came into use, have been the chief reliance of the natives for vegetable food. Wild rice has been noted as a native grain much in use among the Indians of Wisconsin and adjoining sections, yet there were other species of plants perhaps as useful in this respect. There were also in use, some of which were cultivated to some extent, species of the agave, calabash, bean, manzanita, nuts of various trees, and many other plants.

The native mammals of the larger species found in North America at the appearance of the whites, were in general fewer in number and inferior in ferocity and usefulness to man, save as food, than in the eastern continent, with, however, a few striking exceptions, as the polar bear and the grizzly bear, the largest species of the group as well as the most ferocious. Of the large food mammals, chiefly ruminants, the most important to the prehistoric natives were the buffalo or bison, the largest native quadruped of the New World, sometimes attaining a weight of two thousand pounds; the musk ox; several species of cervidæ, or deer; two species of antelope, and the Rocky Mountain sheep. Although the buffaloes on the plains and prairies between the Rocky Mountains modified to a considerable extent in the past the customs and mode of life of a number of tribes, and have received more attention from authors than any other American ruminant, and

we may say than any other American animal, yet it is probable that the deer species have been really of more importance to the natives than the buffalo. The seal holds a place also among the useful mammals, both for food and clothing.

Other animals important to the prehistoric peoples were the fur bearers, as the beaver, otter, mink, seal, etc. But our survey will not be complete, though the scope designed be ever so brief, without some allusion to the animals, especially of the larger species, which did not pass out of existence until near the time of man's appearance on the scene, and possibly, as is strongly maintained by a number of authors, in some instances until after that event.

Plants and invertebrates (mollusks, etc.) of the late geologic age known as the Quaternary are, with rare exceptions, living species of our own time, while the mammals are nearly all extinct. A study of the latter, however, brings before us some singular features and enables the imagination to picture the New World as nature was giving it the final touches preparatory to man's coming upon the stage. One grand feature of the life of this closing age was the great size of the mammals, the elephants of both continents far exceeding the modern elephants, and the same being true of the herbivorous species and many of the carnivores, edentates, and rodents. The genial climate that followed the glacial epoch seems to have been marvellously adapted to the species of this class.

North America was preëminently the continent of herbivorous species in the Quaternary period, but the carnivorous species were relatively few. The most widely distributed species and one of the largest was the *Elephas primigenus*, or mammoth, the giant elephant of the preceding age. It ranged from Georgia, Florida, Texas, and Mexico on the south to Canada on the north, and Oregon and California on the west; possibly wandered occasionally through groves of the giant cedars of that western coast. It was a hairy species, fitted for life in cold temperate latitudes. Paleontologists tell us that it was over twice the weight of the largest modern elephant and nearly a third taller.

Another elephant-like animal, of still greater size, was the mastodon (*M. Americanus*), the remains of which have been found quite abundantly over the northern half of the United States, also in the Carolinas, Mississippi, Arkansas, Texas, Canada, and Nova Scotia. When alive, this animal in the adult stage reached a height of twelve or thirteen feet, and was seventeen or eighteen feet long exclusive of the tusks, which would add six or seven feet more to the length.

But elephants, though possibly overlapping to some extent man's epoch, have vanished entirely from the western continent; nor were they the only important North American mammals of the Quaternary Age. Strange to say, the horse wandered over the prairies of the western world before the days of Columbus or Leif the Northman, though he left no descendants to aid man in the New World in his struggle for existence. The *Equus excelsus* was a fit contemporary, observes Leidy, of the mastodon and elephant. Remains of several species of the horse (*Equus*) have been found in North America, "showing," says Dana, "that North America was abundantly provided with horses in the Champlain time, though not having among them the modern horse *E. caballus*."

Other herbivorous animals of the same period were the *Cervalces Americanus*, a species of elk of great size, exceeding in this respect the famous Irish deer: the *Bison latifrons*, a bison or buffalo, much larger than the modern buffalo so lately driven from the Western plains; and also species of the musk ox or animals related thereto. Gigantic edentates, related to the sloth and armadillo, as the megatherium, mylodon, megalonyx, glyptodon, and others, were present in the south temperate zone of North America in that age.

Other mammals of the Quaternary period were the gigantic beaver (*Castoroides Ohioensis*); a species of lion (*Felis atrox*), remains of which have been found in the vicinity of Natchez, Mississippi; and a peccary, which wandered as far north as Virginia and even New Jersey. The llama seems

also to have been represented in North America in that age, as the remains of one species have been found in the gravel beds of the so-called Lahontan Basin, Nevada.

The recent explorations of the Quaternary caves of California, conducted by the Department of the University of California, have brought to light a number of species of mammals of late geologic times, several of which are new to science. These include several rodents, closely related to living species of the same area. However, the most interesting discovery in this connection made during this and other investigations in that section was the remains of the camel. These are reported as being abundant in California. The gigantic sloth-like animal, the megalonyx, appears also to have been well represented on the Pacific coast.

It seems somewhat strange that nature in its evolutionary processes should, as the great ice sheet was finally disappearing in its retreat northward, scatter over the surface of the northern continent a series of such gigantic forms to abide for a brief geologic period and then be swept away just as man was finding his way hither. Nevertheless, if we travel back in geologic time to the Mesozoic age we shall find still more startling evidence of nature's delight in producing gigantic forms. In this era of reptilian forms, as we are told by geologists and paleontologists, lizards equalling and even exceeding in size the alligator and crocodile swarmed on land and in the great marshes, and others, though less in size, of more forbidding forms than the Gila monster of Arizona.

The knob-nosed ceratosaur (*Ceratosaurus nasicornis*) seems to have been a long-tailed kangaroo-like lizard, some seventeen or eighteen feet in length. The hoofed stegosaur (*Stegosaurus ungulatus*) as long as the preceding, with a crest of sharp bony plates along the centre of its curved back, was a horrible animal form. Of the giant reptilian forms it is only necessary to mention the *Brontosaurus excelsus*, over forty feet in length, of which both neck and tail formed one-third, yet with a head scarcely larger than that of the

living python. However, the giants of the race were the Jurassic dinosaurs, reaching sometimes a length of seventy or eighty feet, having at the same time a height of body and massiveness of limb that, without evidence from the bones, would have been thought too great for muscles to move. But the geologic part of our continent, though of absorbing interest, is too extensive for a single chapter. Besides, the mammals which continued so close to man's advent are of most direct interest in our present work. We must also bear in mind that it was during and after the final melting in the Champlain period, when the continent was dripping with water, that the greatest of forests covered the hills and plains. In other words, the animal and vegetable kingdoms corresponded in the great development of their higher types.

Whether or not the era of these great mammal species overlapped the human epoch in North America as in Europe is a question which will be discussed in a following chapter.

## CHAPTER II

### *THE GENERAL RESULT OF PREHISTORIC EVOLUTION*

Before attempting to trace the course of events and processes of the past, which brought about the conditions existing at the time of the discovery, it will be well to take a hasty glance at those conditions, as they form the goal to which all theories must lead. The date of discovery by Columbus and those who followed him forms the border line between the historic and prehistoric eras in America; for the discovery of Greenland, and possibly the north-east coast of the continent, by the Northmen in the tenth or eleventh century is for the present omitted from consideration, as this discovery left no lasting impress upon the native population. The line between these eras was sharply drawn in America, all events which lie back of the discovery belong to the prehistoric age, those subsequent belong to and form a part of the history of the continent; there was no dovetailing of history and prehistory here as in the Old World. The conditions observed at the time of the discovery by the early explorers were the tangible result, the outcome of the prehistoric activities and evolutionary processes, and no theory in regard to the past of the continent can be maintained which fails to recognize them and harmonize therewith; they are in fact the foundation stones on which conclusions in regard to the past of America must be based.

When Columbus landed at Guanahani in 1492, he found it inhabited, and, as he sailed among the islands of the new

world he had discovered, he found them also inhabited. Vespucci met with people along the coast of South America, as did the Cabots and Verrazano as they sailed along the eastern coast of North America. In brief, the first explorers found all portions of the continent which they visited inhabited by people of a race strange and hitherto unknown to the Old World. They found that man was already here, whether autochthon or introduced, a fact with which no conclusion in regard to the prehistoric times of the continent can be at variance. The native must be recognized by every theory, must be, in fact, the chief factor in every conclusion. All data relating to the past must gather around and relate to him, in and through him have all the evolutionary processes of the prehistoric era relating to human conditions taken form and produced the results found existing by the first explorers. The condition of the native population at the discovery by Europeans is therefore a result of the evolutionary processes of the past and forms the beacon light that must guide investigators of America's prehistoric age in reference, especially, to the character of those processes, and the lines along which they have acted. Consequently, every fact in regard to native culture, and the social condition, distribution of population, languages, mythology, and folklore of the native inhabitants at the time of discovery, are important aids in this study.

Investigations made and facts ascertained since the primary explorations have shown that the entire continent was, with the exception of certain inhospitable regions, inhabited at the time of the discovery—some sections, it is true, with only a sparse population, in small scattered groups or settlements, but other regions more densely peopled, the inhabitants being gathered in numerous and extensive villages. It has also been ascertained that, although the aborigines of the New World pertained to a single race, they were divided into numerous linguistic stocks, some eighty or more of these stocks, or families, speaking distinct or unrelated languages,

being found in North America alone, many of which were composed of several tribes speaking different dialects of the same tongue. In this classification most philologists have considered the Eskimo of the Arctic section as more abnormal than other groups and as forming a sub-race, the remaining aborigines of the continent forming together another sub-race. To the latter those adopting this theory often limit the name "Indian." All grades of culture, from a low status of savagery to a real semicivilization, were represented by the North American tribes; from the Paiute "Digger," whose habitation for the greater part of the year consisted of little more than a brush screen to break the wind, to the Maya, who reared stately stone temples profusely ornamented with elaborate sculpturings. These facts are sufficient to indicate some of the serious problems confronting him who attempts to probe the mysteries of prehistoric America, some of the questions it is expected he will answer. Were the people discovered by the early explorers autochthones, or were they introduced from the eastern continent? If introduced, from what quarter or quarters did they come, how, by what route, and when? How is the general homogeneity of the race, which stretches from the shores of the Arctic Ocean in North America to the southern extremity of South America and from ocean to ocean, and yet split into numerous ethnic and linguistic groups, to be accounted for if they were introduced? Is it to be assumed that an entire race, though the numbers were few or many, abandoned its original home and migrated in mass or in successive waves to another continent; or will this uniformity be accounted for on the supposition that racial characterization took place in the new continent through long residence in and the influence of the physical features of that continent? The origin of the family or stock and of tribal distinctions, the origin, growth, and geographical limitations of the higher culture, etc., are questions presented by the few very important items mentioned above as among the conditions observed by the first European explorers.

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These conditions, which will be mentioned in greater detail, form the goal toward which all the supposed lines of development must point; the termination of all theories propounded.

Among the many important facts pertaining to the prehistoric era mentioned by the pioneer explorers were the evidences of advanced culture, approaching the very threshhold of civilization, observed in Mexico and Central America, but a culture somewhat clearly defined geographically, and reaching in extent from central Mexico to the border of Nicaragua, and from coast to coast. Evidences of this culture are still apparent in the crumbling remains of remarkable stone structures, which have excited the interest of the more recent explorers and of all students of ancient American culture. The remains of temples, so-called palaces, and other stone structures are yet sufficient in many places, as at Xochicalco and Mitla, in Mexico, and Uxmal and Chichen Itza, Yucatan, to show the method of construction, and the elaborately sculptured ornamentation of the broad friezes extending entirely around the buildings, furnish the antiquarian in some instances with rich material for study. Ruins of this character have been found, in addition to the places named, at Labna and other points in Yucatan; Palenque, Piedras Negras, Menche, and Xachilan, Chiapas; at Tikal, Santa Lucia, Quirigua, and elsewhere in Guatemala; Copan, in Honduras, etc. But it is very likely, and in some instances certain, that what are now ruins were yet in use and comparatively uninjured when first seen by European explorers. It is more than probable that Uxmal, Chichen Itza, and even Palenque were still inhabited when first visited by Spanish adventurers. Had a complete record been made and preserved of all actually seen and learned by these first adventurers, it is more than probable that many doubts in regard to the past history of this section would be removed. There is yet a blank in the history of the first entry of the Spanish conquerors into that region, especially Chiapas, Guatemala, and Honduras, that will probably never

be correctly filled. Recent authors have assumed, apparently without sufficient grounds, the ruined condition of many of these ancient pueblos at the time of discovery. This serves as a kind of covering to our ignorance, but fails to remove the doubts that will arise as we study these remains and their imperfect history.

Their architecture was not the only evidence of the advanced culture of the ancient people of Mexico and Central America, especially of the Mayas of Yucatan, Chiapas, Guatemala, and Honduras. Their sculpturing, which has been incidentally mentioned, was carried even to a more advanced stage than the ornamentation of friezes, as the great monoliths at Copan and Quirigua, and the atlantean figures at Chichen Itza attest. The monoliths are elaborately carved statues, in which the human form is enveloped in rich and profuse costume, and the full face and the hands are distinctly shown. These, which probably represented native deities and varied in height from six or eight to sixteen feet, stood in their temple plazas, often accompanied by an altar.

It need not surprise us that the early Spanish authors were amazed to find these cultured natives without iron implements, and even to the present day, ever and anon, we see the statement published that the ancient people of Central America and Peru had hardened copper or bronze implements, so difficult is it to accept the fact that all the quarrying, dressing, and sculpturing of stone for building and statuary was done with stone implements.

There are, however, still other evidences of advanced culture in this part of the continent. Both Mexicans and Mayas had reached that stage in which they used pictographs and hieroglyphics to convey ideas, and wrote their symbolic characters on dressed skins and also on a kind of paper made of the maguey plant. These, which were in the form of long strips, they divided into pages and folded to the form of a book, hence it is not an exaggeration to say that they had books, some of which, notwithstanding

the holocausts made of them by the Spanish priests, have survived to the present day. The Mayas, who had carried their writing to a more advanced stage than the Mexicans, or Aztecs, used somewhat regular characters of a square or rounded form, which they wrote or painted in lines and columns in their manuscripts, mostly in black, sometimes in red, and carved in columns or lines on tablets, the walls of their temples, or on the sides and backs of their great stone statues. Some of these, as has been ascertained, indicate numbers, and their days, months, and other time divisions. They had a regular though complicated calendar system; and had carried their arithmetical calculation in their vigesimal numeral system, as shown both in the manuscripts and inscriptions, up to the hundreds of thousands and in some instances even to millions. Another great step they had taken, which possibly had much to do in causing advance in culture, was the discovery of maize and cotton and their cultivation as a means of supplying food and clothing, their reliance at the time of the discovery for subsistence and clothing being almost wholly on the cultivation of the soil.

However, it is not necessary to mention here other evidences of advanced culture, as this will be discussed in a subsequent chapter, the purpose in referring to the subject here being to indicate some of the conditions found existing at the discovery as tangible evidences of the outcome of prehistoric activities and evolutionary processes, and to note briefly some of the problems thereby presented to the student.

What was the origin of this advanced culture; was it an exotic plant or was it indigenous? Why did the highest development take place in this tropical region instead of by the great lakes or in the fertile valleys of the Mississippi and Ohio? These are questions which have been asked again and again, but as yet remain without entirely satisfactory answers. What adds difficulty to the problem is the fact that this culture was not confined to one stock, but includes several; in fact, was not coincident with ethnic lines.

Passing northward into the mountain region now included in Chihuahua, Mexico, and Arizona, New Mexico and southern Colorado in the United States, we reach the section where the early explorers, led by Coronado, found evidence of a culture a stage lower than that they had seen in the more southern regions, but yet a culture above the grade of savagery, and in some respects peculiar to the section. This being a country without forests, the natives were forced to construct their dwellings with the materials at hand. These, which are large communal buildings of many cell-like rooms, built of adobe, or small stones and clay, are in some respects among the most interesting structures on the continent.

The people here, like those of Southern Mexico and Central America were completely sedentary, residing in villages, or pueblos, and depending upon the cultivation of the soil for subsistence. Cotton was also cultivated and used in forming the fabrics for wearing apparel. They had also, like the Mexicans, learned the art of irrigating their lands to increase their fertility and ensure the crop against drought. It is true they used but small sluices, carried along the treeless slopes to the fields, yet this was a long advance beyond the low stage of savagery in which many tribes still remained at the time of discovery; it was even beyond the lower state of barbarism, using this term in accordance with Lewis H. Morgan's classification of the culture grades. By way of explanation of the terms "savagery" and "barbarism," it may be stated that this able ethnologist classified culture in three principal stages,—savagery, barbarism, and civilization; each of the lower two to be subdivided into a lower, middle, and upper status, and each determined by certain activities. Though useful as a means of reference in broad generalization, the unfortunate use of the terms "savagery" and "barbarism" has prevented to some extent the adoption of the system.

Another conspicuous feature of North American antiquity which must be taken into consideration in this brief and

anticipatory outline consists of the numerous artificial mounds that are scattered over the extensive area stretching from the Gulf of Mexico northward to and beyond the lakes, and east and west from the Alleghany Mountains to the margin of the plains west of the Mississippi. These have been the subject of much theorizing and often wild speculation, and, in late years, of exploration and much study. For well-nigh a century, they were ascribed by most writers dealing with the subject to a supposed highly cultured race designated the "Mound Builders," quite different from the red men, a race destroyed or driven out by the savage Indian hordes. A single voice raised at intervals in protest against this conclusion was overwhelmed by the declarations of the leading authorities of the time. Research and careful scientific investigation, however, have to a large extent cleared away the mist that surrounded the subject, and it is now generally conceded that the authors of these works were the immediate ancestors of the Indians found inhabiting this section when visited by the first European explorers. These works, which are found in great numbers in some sections, consist of several types, as the ordinary conical tumulus, the pyramidal mound usually in the form of a truncated pyramid, and the effigy mounds or those singular earthen structures found chiefly in Wisconsin, which are made to represent animal forms. In addition there are walled inclosures in various forms, though in the main circular; shell and refuse heaps, etc. These structures are also results of the evolutionary processes of the prehistoric age to which one line in the investigation of the past must lead, when its problems have been solved. Although the chief question, "Who were the builders?" has received an answer which is generally accepted, there remain other questions which as yet have received no satisfactory reply. These tangible results must, however, be considered in the investigation of prehistoric North America. Mounds, it is true, are found in many countries both of the Old and the New World; but



Skeleton of Brontosaurus. *From the original in the Museum of Natural History, New York.*

why are they, in the latter, so numerous in the Ohio and Mississippi valleys and the Gulf States, and so few east of the Alleghanies? Why are the Wisconsin mounds so largely of the effigy or animal type, while so few of this type are found elsewhere? What relation do the mounds bear to the social life and food supply of the tribes by whom they were built? These are some of the questions which arise in the study of these monuments.

The early explorers found natives of other sections in a still lower grade of culture, who made no pottery, knew nothing of agriculture, but depended for subsistence entirely upon edible roots, grass seed, wild fruits, fish and game; who had no permanent settled homes, but moved from place to place in quest of food. Their dwellings in the wooded regions were but temporary shelters built of brush and twigs, and on the prairies tents of skins.

Thus it will be seen that at the discovery every grade of culture from true savagery up to semicivilization was represented in North America. Nevertheless all were, in one sense, still in the Stone Age, as they had not yet learned the use of iron, and although copper had been brought into use, chiefly for ornamental purposes, it was not used for implements, as the natives knew no way of hardening it to a degree proper for this purpose. All the work that required hard edge tools was performed with stone implements.

All grades of culture were without domestic animals, save the dog in some sections, the turkey in the Pueblo region and further south, and bees among the Maya tribes. Man, or perhaps more correctly speaking, woman was the only beast of burden known to the natives of North America before the days of Columbus. In South America the llama and vicuña had been utilized for this purpose. The Cahokia mound, the largest tumulus east of the Rocky Mountains, must have been heaped up by individual loads scraped with wooden or stone implements from the surrounding area and carried in the arms or on the shoulders to the place of deposit.

One of the most important items of the conditions at the time of discovery forming an index to the prehistoric evolutionary processes, was the distribution of the various linguistic stocks, their comparative size, and the extent of country they occupied. This throws some light on the social conditions of ancient America, as it shows the outcome of association. The groups have been in great part defined by differences in languages, as this has been found the best criterion as to racial affinity in the New World that has yet been suggested. As before stated, the number of stocks or linguistic families in North America as defined at the present day amounts, or did amount at the time of discovery, to about or a little over eighty; of these, however, it is only necessary to notice here the more important, judging by the population and extent of country occupied.

The aborigines occupying the area between the Rocky Mountains and the Atlantic, north of the Rio Grande, at the time of discovery were divided into some twelve or thirteen stocks, five or six of which were small and unimportant, residing mostly on or near the Gulf coast. Of the larger stocks, the most populous and the one occupying the greatest area was that known according to the classification and nomenclature of the Bureau of American Ethnology as the Algonquian family. To this group belonged the Indians with whom the colonists of Plymouth and Jamestown came in contact, and also the Delawares, Mohegans, Shawnees, Miamis, Chippewas, and other historic tribes of the Ohio valley and the upper lake region. The territory of the family extended from Tennessee River to Labrador, and along the Atlantic coast south to Roanoke River; northwest to Churchill River on the west side of Hudson Bay and westward to the great plains of the upper Saskatchewan. How far they had progressed westward on the plains at the time of first contact with the whites on the Atlantic coast is not known, but certainly not to the extent reached when the whites had succeeded in penetrating to that region.

Gathered about Lakes Erie and Ontario in the midst of this great Algonquian sea was the Iroquoian stock with a large outlying colony in the mountainous region embracing what now forms the adjoining sections of Tennessee and North Carolina. This family included the noted warrior tribes of the Six Nations who became a terror to both whites and Indians from Canada to Georgia; and the Hurons, whose pathetic history has excited the sympathy of all who have read the account of their destruction. The outlying colony consisted of the Cherokee tribe, whose wonderful vitality has, notwithstanding their many conflicts with the dominant race, brought them down to the present day with scarcely diminished numbers.

A third important group known as the Muskhogean family, occupied the greater portion of the region now embraced in the States of Mississippi, Alabama, and Georgia. This family included the so-called Creek Nation, the Choctaws, and the Chickasaws; but the Seminole tribe which became so prominent in later years as a part of this group had not come into existence as an organization at the time of discovery. Fortunately for historical and ethnological studies, De Soto's wild chase after gold through this region in 1539–1542, less than fifty years after Columbus had first sighted land of the western hemisphere, brought to light much information regarding the natives.

Another important group of this cis-montane area is designated in the classification of the Bureau of American Ethnology the Siouan family. It embraces those wild Bedouin of the western plains known as Dakotas or Sioux, as well as the Osages, Iowas, and Ponkas, formerly in the region of Missouri, Iowa, and Nebraska. It also includes the sedentary Mandans, who, as suggested by Catlin, following the wild, speculative spirit of his day, were the offspring of the followers of Madoc, the Welsh prince, who tradition says sailed to America about 1170; and who, Catlin thought, might have sailed up the Mississippi and the Ohio, built the mounds of the Ohio valley, and,

finally driven out by wild Indian tribes, have migrated to the upper Missouri.

A fourth group known as the Caddoan family, includes the wild Pawnees of the plains and the sedentary Arickarces associated with the Mandans. If the former were encountered by Coronado in his search for the mythical Quivira their habitat at the time of discovery must have been substantially the same section as that over which they roamed two centuries later.

Passing to the western slope, the principal stocks found inhabiting that part of the continent and the more southern sections of Mexico and Central America were the following: The Athapascan, spreading over the northwestern part of the continent from Hudson Bay to the vicinity of Bering Strait, and reaching southward to the vicinity of the Strait of Juan de Fuca. A great separated division, including the warlike Apaches and Navahos, was spread over a large portion of the region now embraced in Arizona and New Mexico in the United States and parts of northern Mexico.

The Shoshonean group, which Major Powell retained as a distinct family, occupied at the earliest notice of them a considerable part of the region now included in the states of Oregon, Nevada, Idaho, Utah, and Colorado. But the group, in the more recent classification, has been included in the great Nahuatlan family, which embraces the Pima, Opata, Yaqui, Tarahumer, and other north Mexican tribes, as well as the great Aztec tribe, which at the time of the conquest held control over a large portion of the present Mexico, with colonies planted in Guatemala, Salvador, and Nicaragua. The next most important stock of this tropical region was the Mayan family, occupying the region embraced in the present States of Yucatan, Chiapas, Guatemala, and the western part of Honduras. As before stated, it was among the people of this stock that the greatest advance in native culture was made. The Zapotec group in southwestern Mexico, the Lencan in Guatemala, and

the Chibchan in Costa Rica and Panama, must have played important rôles in pre-Columbian times; and as they were encountered soon after the first landing of the whites in the West Indies, they afford useful data for studying the native customs, habits, beliefs, etc., which were so soon obliterated after the Spanish conquest. However, it is unnecessary to give further particulars in this respect here, as the data will be found in detail in Volume II of this series.

The foregoing notice of the conditions of native society and native progress at the coming of the whites, though very brief, is sufficient to indicate the principal lines along which investigation of prehistoric times in North America must proceed, if the student wishes to avoid, as far as possible, launching out into the wide field of pure speculation. Where the data are so few as those relating to prehistoric America, the temptation to draw heavily upon the imagination is strong, and even where the utmost caution is used, and the most stringent restraint applied, it is often necessary to use the imagination in crossing gaps where data and fair deductions fail. Digesting to some extent the chief items of the preceding summary, the following lines of inquiry and investigation are brought prominently before the mind.

Taking up the last-mentioned topic, the geographic distribution of stocks at the time of discovery, we are impressed by the great difference in the size of these groups, and of the extent of territory occupied or controlled by them. Judging by Major J. W. Powell's map of "Linguistic Stocks" (*Seventh Ann. Rep., Bureau of American Ethnology*) the Algonquian and Athapascan families spread over nearly one-half of the surface of North America. If the Nahuatlan group, as at present extended, be considered as constituting a single family, it may be said with little or no exaggeration that the three stocks covered together two-thirds of North America. It is also noticeable that, with the exception of the Algonquian tribes along the northeast coast of the United States, these large groups were

almost wholly in the interior, while the smaller tribes were pressed to the coast. This is a remarkable feature of the Pacific side, where some twenty-eight or thirty diminutive stocks have been pushed to the coast while the single Shoshonean sub-family borders the entire series on the inner margin. This result must have had a cause, and although we may reason from analogy, using the growth and development, as well as the waning and diminution of tribes or nations in the Old World, yet there are so many differences between the Old and the New as to weaken and render doubtful the deductions drawn, but some useful lessons may be learned from the early history and movements of American tribes but little subject to white influence. Nevertheless, some lines of investigation are clearly indicated by the geographical distribution of the stocks and tribes, and some of the primary steps of that investigation are suggested thereby. It is, for instance, apparent, bearing in mind the conclusion of philologists that the languages of the different stocks are distinct and unrelated, except in the very broad racial sense, that much time was required to enable the prehistoric processes to bring about this condition.

Another point connected with this distribution, which requires investigation and study relates to the relative permanency of position. Major J. W. Powell, speaking of the linguistic map (see maps B and C, Volume II of this series) prepared for the *Seventh Annual Report of the Bureau of Ethnology*, says:

"In the first place, the linguistic map, based as it is upon the earliest evidence obtainable, itself offers conclusive proof, not only that the Indian tribes were in the main sedentary at the time history first records their position, but that they had been sedentary for a very long period. In order that this may be made plain, it should be clearly understood, as stated above, that each of the colors or patterns upon the map indicates a distinct linguistic family. It will be noticed that the colors representing the several

families are usually in single bodies, *i. e.*, that they represent continuous areas, and that with some exceptions the same color is not scattered here and there over the map in small spots. Yet precisely this last state of things is what would be expected had the tribes representing the families been nomadic to a marked degree. If nomadic tribes occupied North America, instead of spreading out each from a common centre, as the colors show that the tribes composing the several families actually did, they would have been dispersed here and there over the whole face of the country. That they are not so dispersed is considered proof that in the main they were sedentary."

From the time of the discovery at the close of the fifteenth century that America was inhabited by a hitherto unknown race, down to the present day, the origin of this race has been a subject of discussion, the problem having been attacked seemingly from every possible point of view. However, though the theories advanced have been almost as numerous as the leaves of Vallambrosa, they may be arranged in three radically different classes, as follows: The autochthon theory, that American natives had their origin in America; second, that man appeared on the continent during or preceding the glacial epoch; and third, that his advent was subsequent to that epoch.

It is claimed with some truth that the recent progress in the study of the geological features of the globe, especially of the western continent, and the theory of evolution have placed the question on a different plane from that on which the contest was waged in former years. The theory of evolution and modern discoveries in paleontology have certainly had a tendency to lead scientists to agreement with the time-honored belief that the Old World was the earliest home of mankind. It is on that continent that the extinct and surviving species of tailless apes which approach nearest the human form are found, while they are absent from America. There are at the present day few if any prominent advocates of the theory that man was autochthonous

on the Western Hemisphere; even the name of the elder Agassiz is insufficient to give it any longer a place in scientific circles.

Having accepted the theory that man did not originate in America, it follows as a necessity that he made his way hither at some time in the past from some other part of the world. Is it possible to point to any indications or data by which to judge of the era of his advent; the place or places of departure; the point or points of entrance; and the manner in which he made his way hither?

Of the other two classes of theories, the first—that man appeared on the continent preceding or during the glacial epoch—presents but little diversity in character, the theories embraced therein being included in one general type, as the variations relate chiefly to the direction from which man came, and whether his appearance was preglacial or interglacial, though the interglacial theory has but few advocates. The question, however, of the origin of the aborigines is so closely connected with that of man's antiquity on the continent, that some conclusion in regard to the latter must be reached before the first can be satisfactorily discussed. This, as Brinton has remarked, is the initial inquiry, the governing factor in the discussion of the other questions mentioned. To him who believes that man was living in America in preglacial times, the geological changes which intervened before the present condition of the earth's surface had been brought about are of far more importance in discussing the route followed and the point of entrance than to him who places man on the continent no further back in time than the neolithic or polished stone age, or comparatively late in the Pleistocene era.

The first appeals to geology and the conclusions of those geologists who affirm that in the preglacial era the climate of the circumpolar region was comparatively mild, and that the land extension in the northern regions at that early period brought Asia, and perhaps Europe, in connection with America, making passage from one to the other easy;

or to those who maintain the theory that previous to or during the interval between the glacial periods a great land bridge extended from Europe by way of Iceland and Greenland to the western continent. If the theory in regard to these former geologic conditions receives the general acceptance of geologists, the question is then merged into that of the antiquity of man in America. In other words, if man's advent was previous to the commencement of the ice age, the pathway was, according to geologists, unobstructed.

On the other hand, to him who maintains that the advent of man was subsequent to the glacial epoch, hence in a geological sense recent, no such means of entry as may be supposed under the former theory is admissible, as the general outlines of the continent as well as its topographical features were substantially the same then as now.

The theories of the first class, adopting the time estimates of the geologist, necessarily carry back the first appearance of man on the continent to a very remote period measured by the hundreds of thousands, if years are the units. Assuming that the climatic and geographic features were as mentioned, man is introduced by some advocates of the preglacial theory from Europe, and by others from Asia. The theories of this class, all of which belong to quite modern times, are maintained at present by many strong advocates, probably a moiety of the scientists who touch upon the subject, though it is doubtful whether this ratio will apply to North American students.

The other class embraces a multitude of widely divergent theories, though all on the basis of man's appearance on the continent in the postglacial or quaternary era. These theories, which began to be propounded soon after the discovery, introduce man from almost every part of the Old World, and from most of the principal nations. By one he is derived from the bold seagoing Phœnicians; a theory much exploited peopled the New World from the offspring of the so-called "lost tribes of Israel"; others derive him from Egypt, China, Greece, Wales, Mongolia, etc. We need not,

however, to dwell upon the many wild and extravagant theories which have been advanced on this subject, as they are well known and, moreover, most of them have been permanently relegated to the discarded group. At present, scientists appear to be divided chiefly on two theories, especially if the question be limited to the origin of the natives of North America: to wit, the theory of glacial or preglacial man; and the theory which brings him by way of the extreme northwestern coast of America from northeastern Asia in the postglacial era.

The wide difference between these two theories and between the results which flow from them forbids entirely any attempt at the broadest generalization, or their consideration in parallel lines; the adoption of one is the absolute rejection of the other. The discussion of the prehistoric times of the continent must therefore be based on one or the other of these two theories. The neglect by the writers treating of the subject to make prominent this distinction, and to indicate, at least to some extent, the differences flowing therefrom, is a fault deserving notice. In order to imagine the vast differences which must have resulted in the prehistoric era, it is only necessary to state that while the one theory brings man to the continent one hundred and fifty thousand or possibly twice that number of years in the past, and before the great changes in the earth's surface and the climatic conditions of the glacial epoch, the other places the advent subsequent to these changes, and probably but ten or twenty thousand years back.

The advocate of the early entry must of necessity hold the view that as the ice and snow sheet spread southward, the inhabitants who occupied the northern regions were driven before it, pressing against the tribes further south, which is supposed by some of the advocates of this theory to account for the denser population in Mexico and Central America. The sequence of this pressure southward must have been the return northward as the cold diminished and the glaciers receded. This further necessitates one of two

conclusions in regard to the Eskimo: that they moved northward from the fertile lands and game inhabited forest regions of more southern sections and followed the receding glaciers northward, step by step, until they reached the barren, frozen regions they now occupy; or otherwise, that they entered this extreme northern section from some other quarter, presumably Asia, after the close of the glacial epoch. However, to admit the latter would be a virtual admission that, so far as means of entry is concerned, there is no necessity for the preglacial or interglacial theory, unless the evidences of man's antiquity in the New World, otherwise shown, require it. The theory, in truth, depends not upon the geological conditions, however intimately they may have been connected therewith, but upon the evidences of man's antiquity here.

In discussing questions of this character, where any conclusion reached will be largely hypothetical, it is a wise rule to insist that where the tendency is toward the extreme, the stronger should be the evidence adduced. In this instance the tendency to approach an extreme antiquity should be strengthened by evidence proportionally strong. On the other hand, where the tendency is to shorten extremely the period of man's abode on the continent, evidence in the other direction, explaining the rapid development resulting in the conditions mentioned above, should be satisfactory. In other words, the theory which allows a reasonable time for the development of the conditions found at the date of discovery, but does not stretch it to an undue length, is, on general principles, the safest.

We turn, therefore, first to a brief discussion of the evidences or supposed evidences of the great antiquity of man on the continent. However, only a very brief presentation of the pros and cons, and the substance of the arguments of the advocates and opponents of the theory will be made showing the present status of the discussion.

## CHAPTER III

### *PALEOLITHIC OR GLACIAL MAN*

In calling attention here to the question of glacial or paleolithic man in North America, the object, as indicated in the closing paragraph of the preceding chapter, will be chiefly to allude very briefly to the evidence brought forward by the advocates and opponents of the theory. The subject is too extensive to be even fully outlined here; our allusion will, therefore, be only to the chief items on which the opposing schools rely. It must be understood, however, that the discussion, so far as carried, relates to North America only.

A recent writer, an advocate of the theory of glacial man, summarizing says: "Now the traces of the existence of men in North America during the glacial epoch, have in recent years been discovered in abundance, as for example, the paleolithic quartzite implements found in the drift near the city of St. Paul, which date from toward the close of the glacial epoch; the fragment of a human jaw found in the red clay deposited in Minnesota during the earlier part of that epoch; the noble collection of paleoliths found by Dr. C. C. Abbot in the Trenton gravels in New Jersey; and the more recent discoveries by Dr. Metz, and Mr. H. T. Cresson" (Fiske *Discovery of America*, i, 7–8, 1901). The same author, in the pages immediately following the quotation given, elaborates his summary thus:

"The year 1873 marks an era in American archæology as memorable as the year 1841 in the investigation of the antiquity of man in Europe. With reference to these problems Dr. Abbott occupies a position similar to that of

Boucher de Perthes in the Old World, and the Trenton valley is coming to be classic ground, like the valley of the Somme. In April, 1873, Dr. Abbott published his description of three rude implements which he had found some sixteen feet below the surface of the ground, 'in the gravels of a bluff overlooking the Delaware River.' The implements were in place in an undisturbed deposit, and could not have found their way thither in any recent time; Dr. Abbott assigned them to the age of the Glacial drift. This was the beginning of a long series of investigations, in which Dr. Abbott's work was assisted and supplemented by Messrs. Whitney, Carr, Putnam, Shaler, Lewis Wright, Haynes, Dawkins, and other eminent geologists and archæologists. By 1888, Dr. Abbott had obtained no fewer than sixty implements from various recorded depths in the gravel, while many others were found at depths not recorded or in the talus of the banks. These human skulls and other bones, along with the tusk of a mastodon, have been discovered in the same gravel. Careful studies have been made of the conditions under which the gravel-banks were deposited and their probable age; and it is generally agreed that they date from the later portion of the Glacial period, or about the time of the final recession of the ice sheet from this region. At that time, in its climatic and general aspect, New York harbor must have been much like a Greenland fiord of the present day. In 1883, Professor Wright, of Oberlin, after a careful study of the Trenton deposits and their relations to the terrace and gravel deposits to the westward, predicted that similar paleolithic implements would be found in Ohio. Two years afterward, the prediction was verified by Dr. Metz, who found a true palæolith of black flint at Madisonville, in the Little Miami valley, eight feet below the surface. Since then further discoveries have been made in the same neighbourhood by Dr. Metz, and in Jackson county, Indiana, by Mr. H. T. Cresson; and the existence of man in that part of America toward the close of the Glacial period may be regarded as definitely

established. The discoveries of Miss Babbitt and Professor Winchell, in Minnesota, carry the conclusion still farther and add to the probability of the existence of a human population all the way from the Atlantic coast to the upper Mississippi valley at that remote antiquity.

"A still more remarkable discovery was made by Mr. Cresson in July, 1887, at Claymont, in the north of Delaware. In a deep cut of the Baltimore and Ohio Railroad, in a stratum of Philadelphia red gravel and brick clay, Mr. Cresson obtained an unquestionable palæolith, and a few months afterward his diligent search was rewarded with another. This formation dates from far back in the Glacial period. If we accept Dr. Croll's method of reckoning, we can hardly assign to it an antiquity less than 150,000 years.

"But according to Professor Josiah Whitney there is reason for supposing that man existed in California at a still more remote period. He holds that the famous skull discovered in 1866, in the gold-bearing gravels of Calaveras county, belongs to the Pliocene age. If this be so it seems to suggest an antiquity not less than twice as great as that just mentioned."

As the auriferous gravels of Calaveras County are assigned to the Pliocene age, this supposition of Professor Whitney would place man in America as early as the latter part of the Tertiary epoch, thus assuming for him an antiquity much greater than the one hundred and fifty thousand years given him in the above quotation following the chronology of the geologists.

Such is, in substance, the evidence now relied upon to sustain the theory of glacial man in North America, though Professor G. Frederick Wright, the most active and enthusiastic advocate of the theory in this country, presents in his *Man and the Glacial Period*, some additional items which he considers evidence in its support. One item is the affidavit of a mining engineer asserting that he had found a stone mortar and pestle together with some spear heads in the undisturbed gravel underneath the lava of Table Mountain. Another item is a figurine, a small clay image

from an artesian well at Nampa, Ada County, Idaho, found at the depth of three hundred and fifty feet, and after the boring had passed through a lava bed. It is somewhat singular that Professor Wright has allowed the appendix to his book by Professor H. W. Haynes to remain in a second edition without any reference to the wide difference between himself and Professor Haynes in regard to the Calaveras skull.

Professor Haynes's remarks on the subject in that appendix are as follows: "I will not occupy space here in repeating arguments I have brought forward elsewhere to show the utter insufficiency of this evidence to prove the existence of man on the Pacific coast of our continent during the Pliocene period. They may all be summed up in the words of Le Conte: 'The doubts in regard to this extreme antiquity of man are of three kinds, viz: (1) Doubts as to the Pliocene age of the gravels—they may be early Quaternary. (2) Doubts as to the authenticity of the finds—no scientist having seen them *in situ*. (3) Doubts as to the undisturbed conditions of the gravels, for auriferous gravels are especially liable to disturbance.' The character of the implements said to have been found gives peculiar emphasis to this last doubt *for they are not Paleolithic* but *Neolithic*." Professor Haynes adds: "No archæologist will believe that while Paleolithic man has not been discovered in the Tertiary deposits of western Europe, the works of Neolithic man have been found in similar deposits in western America. . . . I think we shall have to wait for further and better evidence than this before we are called upon to admit that the existence of the Tertiary man upon our Pacific coast has been established." Yet Professor Haynes was a firm believer in glacial man.

McGee, together with Professor Holmes, visited the locality in California, in 1898, where these discoveries occurred, and made a careful investigation of all the evidence bearing upon the subject, in addition to an examination of the sites where the finds were made. The result was the confirmation of the geological position assigned to the auriferous



Cavate dwellings on the Rio Grande, New Mexico.

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gravels, and also of Dr. Le Conte's decision that the implements found belong beyond question to the Neolithic era, the mortars, pestles, and mealing stones being similar to those recently in use among the Indians of this region.

It is scarcely necessary to add in regard to the Nampa figurine that clay images indicate a knowledge of pottery making, a rather advanced art for preglacial or glacial man. Major Powell's remark in jest that it looked more like a toy made by an Indian mother for her child than a paleolithic relic was perhaps nearer the correct solution of the problem than the argument of the author who presents it as one item of evidence in favor of the theory of glacial man.

The evidence and arguments presented by the opponents of the theory of glacial man in North America, especially by Professor W. H. Holmes, which cannot be given in detail or even fairly summarized here, include a reëxamination of the sites, which they state results in the conviction that the finders were in several instances deceived as to the original position of the implements discovered; and that there are strong indications that in some of the cases mentioned the implements have been carried down from the surface layer by the sliding of the earth, the overturning of trees, or decay of the tap roots or by other disturbances of the strata. In other cases, they contend that the implements found show no satisfactory evidence of artificial fracture or human workmanship; and in other instances the chipped implements are not of the type of European paleoliths, but are identical in every respect with the incomplete and rejected forms of the Indian workshops.

The supposed glacial origin of the stone implements, etc., found in the Trenton gravel of New Jersey by Dr. C. C. Abbot has been shown to be predicated on a very doubtful basis. Moreover, these and other finds assumed to be of the glacial age have nothing in their form, finish, or character to distinguish them from thousands of a more recent age.

One point made by the opponents of the theory in regard to the finds in the Trenton gravels—the chief dependence

of the advocates—is the lack of indications of human art in the confessedly undisturbed portions of this gravel, as shown by a sewer ditch dug by the city authorities of Trenton through this portion of the deposit, which McGee, Professor R. D. Salisbury, and others visited and carefully inspected.

Other points examined have failed to present to the opponents of the theory any satisfactory evidence on which to base it. Professor Chamberlin, who made an investigation of the reported discovery of human remains under twenty feet of débris near Lansing, Kansas, though finding the discovery to be true, concluded that the formation in which they occurred is not true loess either of the upland or fluvial type, but a secondary deposit, in part, and only in part, derived from the loess.

McGee has elsewhere expressed the opinion that Cresson's Claymont argillite must be rejected, "*first*, on the ground of inherent improbability, because its acceptance would multiply human antiquity by 10, 20 or 50; *second*, because of the presumption that the object really occurred in the talus" (a presumption subsequently accepted by Mr. Cresson); "and *third*, because of the utter lack of definitely corroborative testimony."

It is unnecessary, however, to pursue this aspect of the subject further, as what has been mentioned will suffice to make it apparent that the controversy is by no means ended, neither party having as yet obtained a decided victory, and neither having acknowledged defeat. Possibly man may have reached the continent before or during the intervals of the glacial era, but it is certain that the evidence so far adduced in support of this supposition is exceedingly slender and unsatisfactory. To hang a conclusion of such magnitude, and so important to science, on the occurrence of a few implements of human manufacture in strata supposed to be of glacial origin, when their appearance in these strata may possibly be accounted for without resort to this theory, is at least hazardous.

The New International Encyclopædia, summarizing the present status of the question, considers that "granting the existence of a group of characteristic races which may be termed American, the problem of their origin remains unsolved. It is almost certain that no common origin for all of them can be assumed, but that various sources of population and centres of dispersion must be considered. Failing accurate knowledge of the geological conditions existing in earlier epochs, the most probable sources of immigration were Asia by way of the northwest coast of North America, Europe by way of Greenland, and the general region of Polynesia by way of South America. There are correspondences in physical types and cultures which tend to support particularly the idea of Asiatic and Polynesian relations. However, the theory of the Americas as an independent centre of origin has much in its favor, and must be taken into account. For example, the Eskimo, who form a strikingly homogeneous group wherever found, would appear from the evidence to have occupied, in former times, the territory in the neighborhood of Hudson Bay, and to have spread from that focus north and east and west, following the Arctic coast line, and it is unquestioned that the Asiatic group of Eskimo is of American origin. In short, the problem is complex and deals with a very remote period, which prevents satisfactory treatment. The most popular explanation is, of course, that of Asiatic origin, based upon the striking similarities in type and culture which are evident to even superficial observation. It must be remembered, however, that any relation is mutual, and it is quite as easy to argue for an Asiatic origin from America as for an American from Asia."

Scientists are liable to be carried along their usual lines of investigation without sufficient reference to queries which come from other lines. The geologist and evolutionist, who are not hampered by time limits like the historian, can add years by the thousands or tens of thousands to meet their demands, but the historian must measure his steps by the

lengths of human lives. The latter therefore inquires of the former, How is it that man has advanced so rapidly in various lines of culture in the historic period which reaches back but six or eight thousand years and yet remained a savage for the preceding hundred milleniums? Did it require a hundred thousand years to evolve the culture of Central America and Peru, of the Pueblo region and of the Ohio valley; or did a few thousand suffice? If the latter, why did man remain an utter savage so long? The archæologist brings forward the indications pro and con in his special field, not only along the lines already noticed where geology must be appealed to, but the wholly archæological indications of antiquity. The accumulation of surface soil over ancient ruins is one means of estimating age, not equal, it is true, in different sections, yet sufficient to furnish some indication when the sectional peculiarities are taken into consideration. As the ice and snow of the glacial era must have driven the population to the middle and southern regions of the continent, and the occupation of this region must have extended over a long period of time, it is reasonable to suppose that the proportion of imperishable glacial implements and other artefacts left in the section south of the glacial line would be much greater than in the drift material. These, in the forest areas where the growth and decay of vegetation were going on from year to year, would, after the many thousand years which passed, be found at considerable depth. Yet, notwithstanding the thousands, yea, millions, of points where the earth has been penetrated to sufficient depth, how few specimens have the advocates of the glacial theory presented as proof thereof! The negative bearing of this fact does not appear to have received due consideration from either side. True, not one in a thousand would be noticed by the unscientific workman, but one in ten thousand would by this time have formed a large collection.

Another inquiry which presents itself is the effect of the pressing southward by the encroaching glaciers of the then

existing population of the northern continent. If man was preglacial or interglacial, he had ample time in the mild interglacial periods to develop in numbers, and to form tribes and linguistic groups. The pressure southward by the advancing ice sheet, must, unless the population was sparse, have forced the groups into closer contact, and during the continuance of the last ice age have brought about, through the change in physical conditions during the immense stretch of time over which the ice age extended, corresponding changes in the manners, customs, and even in the physical characteristics of the tribes thus carried southward.

Archæologists have recognized as a prehistoric race of Europe a people known as the "Cave men," a sub-arctic race that in the Pleistocene period inhabited the caves of France, battling with the ferocious beasts of that distant era for existence. They left, however, no representatives among the historic population of Europe. What became of them? Professor Boyd Dawkins has suggested that the race survives in the Eskimo of North America. This suggestion, it is claimed, is strengthened by the fact that "the musk-sheep, which always went and came with the Cave men, is to-day found only in sub-arctic America, among the Eskimo," and that certain implements in use among the Eskimo closely resemble those of the Cave men.—(Fiske, *op. cit.*, i, 16–17.) If we suppose they made their way from Europe to America during the mild interglacial epoch, they must have been driven southward at the recurrence of the cold period. Is it probable that the people of this race, during the many thousand years they remained in the more southern regions in contact with other peoples, before the glaciers again receded, retained comparatively unchanged their racial characteristics? This must be assumed if the above-mentioned suggestion be adopted, or the advent of these Cave men in America must be placed after the close of the glacial epoch; and the route followed assumed to have been, as Fiske suggests, "from the Pyrenees through Germany and Russia and all the vast length of Siberia."

These suppositions and others of a similar character are all included in the conclusion reached regarding the influence of the physical features of the continent upon the characteristics of the incoming population, during the long period of occupancy, if their advent was preglacial. If this long period of residence, without repeated influx from the original hive, be assumed, it would seem to follow as a fair inference that the characterization and formation of the stock peculiarities have taken place on this continent. We must, however, bear in mind the fact that the oldest traditions regarding migrations, former homes, and relationships are of no value whatever in regard to the earlier period if glacial occupancy be assumed, and that language also fails to furnish a chain reaching back over this long period.

Geology, although given such a prominent place in the discussion of the antiquity of man in America, is but one line of evidence, and, so far as man in North America is concerned, not the most satisfactory, because of the lack of positiveness. Other lines of evidence are found in language, in the development of stocks and tribes, in the spread of population over the continent, in the progress of culture, and in the study of the archæological monuments and remains. If philologists can fix upon a chronological scale by which to determine approximately the time required for the formation of languages and dialects, this can be used as a check upon the estimates by other lines. There has been in the past so much loose guessing as to the length of eras, the dates of long past events, and chronological periods, that it is time all possible checks should be applied to these estimates. This is evident from the fact that estimates of the date of man's first appearance on this continent range, even among recent authors, from ten thousand to several times one hundred and fifty thousand years. It is the custom of numerous authors to disparage any efforts to approximate time limits, where the steps are largely theoretical. Nevertheless, such efforts, if made with care, applying all possible checks, often lead to important results;

and constant hammering at the block in the way ultimately reduces it to insignificant proportions.

As the Eskimo have been referred to, and have been used by writers as an important factor in the study of prehistoric North America, the following note is added here as preliminary to a very brief notice of their first entrance into history:

"According to Dr. Rink the Eskimos formerly inhabited the central portions of North America, and have retreated or been driven northward; he would make the Eskimos of Siberia an offshoot from those of America, though he freely admits that there are grounds for entertaining the opposite view. Dr. Abbot is inclined to attribute an Eskimo origin to some of the palæoliths of the Trenton gravel. On the other hand, Mr. Clements Markham derives the American Eskimo from those of Siberia. It seems to me that these views may be comprehended and reconciled in a wider one. I would suggest that during the Glacial period the ancestral Eskimos may have gradually become adapted to arctic conditions of life; that in the mild interglacial intervals they migrated northward along with the musk-sheep; and that upon the return of the cold they migrated southward again, keeping always near the edge of the ice sheet. Such a southward migration would naturally enough bring them in one continent down to the Pyrenees, in the other down to the Alleghanies; and naturally enough the modern inquirer has his attention first directed to the indications of their final retreat, both northward in America and northeastward from Europe through Siberia. This is like what happened with so many plants and animals. Compare Darwin's remarks on 'Dispersal in the Glacial Period,' *Origin of Species*, chapter xii."—(Fiske, *Discovery of America*, i, 18, note.)

The disposition on the part of Dr. Abbott and others to ascribe to them certain objects and conditions found in New England and the North Atlantic States is due to a very generally accepted, but probably erroneous, conclusion

regarding the Skraelings mentioned by the Northmen as seen by them during their stay at Vinland, in the tenth or eleventh century. However, it was through these bold seafarers that the first knowledge of the natives of the western continent was obtained by the people of Europe.

Accepting the conclusion reached by such authorities as Joseph Fischer (*The Discoveries of the Norsemen in America*, English translation, 1903); A. M. Reeves (*The Finding of Wineland the Good*, 1890); and Gustav Storm (*Studies on the Vineland Voyages*, 1888) in regard to the settlements in Greenland, and their decision that Helluland was Labrador, Markland was Newfoundland, and Vinland was probably in Nova Scotia, though a more southern locality has many advocates, we turn to what is noted in regard to the natives. According to the statement of Ari, one of the most reliable of the early Icelandic historians, who lived near the date of which he writes (1148), the first Scandinavian settlers in Greenland saw no native inhabitants, but "they found there, both east and west in the country, the dwellings of men and the fragments of boats and stone implements, such that it may be perceived from these, that that manner of people had been there who have inhabited Wineland, and whom the Greenlanders call Skrellings (Scraelinga)."—(Reeves, *Wineland the Good*, p. 10.) These positive evidences of native inhabitants were subsequently confirmed by actual contact of the early Greenland colonists with the Eskimo. These facts are sufficient to show that the Eskimo had reached Greenland as early as the ninth century of our era. The formerly generally accepted opinion that the Indians seen by Thorfinn Karlsefne, when he attempted to settle Vinland, and by whose attacks he was led to abandon the attempt, were Eskimo is now considered erroneous. There are good reasons for believing that they were Beothuks or Micmacs, probably the latter. The description given, their characteristics, so far as mentioned, and the two or three words uttered by them do not apply to the Eskimo. It was the weight of Rafn's opinion which

caused the theory that they were Eskimo to be so generally adopted; however, the more recent conclusion that they were Beothuks or Micmacs, is now being generally accepted.

The attempt, therefore, to attribute to the Eskimo certain stone implements of the Trenton gravel, as by De Costa (*Pre-Columbian Discovery*, 132) and others, is of no force; moreover, the deposition of these implements is ascribed by the advocates of paleolithic man to the glacial epoch. The idea of connection between the supposed southern extension of the Eskimos in the tenth and eleventh centuries, and these supposed glacial implements is somewhat far-fetched. The fact, however, which seems to be well established, that the Norse settlers of Greenland saw and came into actual contact with the Eskimo is proof that the latter had established themselves in this their most eastern habitat as early as the ninth or tenth century. The following remarks by Dellenbaugh (*North Americans of Yesterday*, 441–2, 1901) will, therefore, not harmonize well with the fact mentioned in the preceding sentence:

"The period of time that has elapsed since the so-called disappearance of the ice was formerly believed to be very great, but views on this point have latterly been much modified. Gilbert has declared, after a study of the Niagara gorge, that the time since the ice left that region is not more than seven thousand years, perhaps less. More recent investigations have tended to confirm his suggestion of fewer years. Immediately after the recession of glacial ice, as may be seen in Alaska to-day, erosion is extremely rapid. I have not space to discuss this point at length, but it is apparent that the rate of erosion is variable, and I doubt if more than five thousand years have passed since the ice left the vicinity of the Niagara gorge. As it still lingers in the North, far down on the Pacific side, it *is probably not more than a thousand years since its influence was powerful in affecting the climate of all the region southward.* The North is undoubtedly growing warmer. Some five hundred years ago Alaska was covered with glacial ice. Five hundred years from now

there will scarcely be a glacier to be found there, except in the highest mountains. 'The next generation will find few of them with their fronts still in the sea,' says Henry Gannett."

In seeking the origin of the Indian race of America there has been a growing tendency in recent years toward the old, time-honored theory of derivation from the Turanian race, Mongoloid element, or some other ethnic group of northeastern Asia. Some do not attempt to define the route while others adhere to the course through Bering Strait. No one at present who does not hold the theory of glacial man advocates the theory of entrance on the eastern side of the continent. However, there are different opinions as to the point and mode of entrance on the western side. Reference to the views on this point of a few modern authors will indicate the range of opinion in this respect. Payne sets forth his views as follows:

Setting aside the consideration that the shallow sea which here separates the two continents is of recent origin, we know as a fact that, unlike the deep and broad ocean which separates the two worlds on the other side of the globe, it has never been a serious obstacle to intercourse between the shores which it separates. The tribes which inhabit them belong to the same stock and speak dialects of the same language. They are well known to each other, for the Tchukchis of the Asiatic side constantly visit America, where they procure supplies of furs and walrus teeth, while the American Esquimaux extend their hunting and fishing expeditions to Asia. In winter the strait is narrowed by ice-floes, which unite in large masses; and after a snow-fall, the Diomede islands, in the middle of the strait, from which both shores are visible, can be reached in sledges. America is even said to be sometimes visible from the Asiatic side of the strait; and the first Russian explorers who visited the Tchukchis learned from them that on the eastern side of the strait there was a vast island which they called "the Great Country," which could be reached by boats in two days. The relative aspect of the two shores would appear to hold out a direct inducement to migration from Asia to America. For while the Asiatic coast is exposed and barren, and covered during most of the year with snow and ice, that of America, protected on the east by mountains, is open to the milder westerly winds, and is washed by a comparatively warm ocean current. Hence in its more genial climate vegetation is better developed, and green forests are even found here and there extending to the sea. The drift-wood from America supplies the Tchukchis with fuel: animal life is

here more abundant, and furs of many kinds, unknown in Siberia, may be procured. Further southward, the sea and rivers teem with fish. If these apparently favourable geographical conditions ever constituted an inducement to immigration, this inducement must have been a permanent one, though it would be subject to interruption, possibly during long periods, by a state of war, such as has within historical times existed between the people of the opposite coasts, or by temporary depopulation on the Asiatic side. But when it is considered that the northeast of Siberia must during existing climatic conditions have always been very sparsely peopled, no great infiltration of population can have taken place during a considerable period; and we are irresistibly referred to earlier times—to the tertiary period, when man's occupation of the New World was an easy and natural process, and to the glacial period, an age when the land was less deeply submerged in the ocean, and broad littoral plains, washed by a warm ocean current, stretched in a vast arc from California to northern Asia, as the periods during which the New World received the main body of that population which it actually drew from the Old.

Nor is Behring's Strait the only place where existing conditions might well attract man from Asia to America. Bounding the sea of Behring on the south, and connecting the Asiatic peninsula of Kamtchatka with the American one of Alaska, there stretches the volcanic chain of the Aleutian islands, of which the coast of north-western America, with its innumerable inlets and channels, formed by the islands and peninsulas which break its uniformity as far south as the Columbia river, is a natural continuation. To some travellers who have explored this natural maritime connection between the two worlds, it has appeared to afford in itself a sufficient solution of the question of American population. From the extremity of Asia to the middle of the coast line of North America, there is a continuous succession of tribes navigating the ocean and deriving their subsistence from it: nor is it possible to determine where the Asiatic element ends and the American begins. As the shell heaps on the coasts of the Aleutian islands afford evidence of an early population similar in its mode of life to that which long inhabited the American coasts, it appears likely that this connection has existed from remote times. It must, however, be admitted that communication between the two continents by way of the Aleutian islands presupposes a degree of skill in navigation far in advance of what is required for the passage of Behring's Strait: for the chain is interrupted by considerable reaches of ocean, extending in one instance to 235 miles. On this ground sound criticism denies the practicability of the Aleutian islands as a route of migration for man in the stage of advancement in which he existed in America at the Discovery; to this route, however, may possibly be due the presence in the New World of some of those advanced maritime tribes of the northwest coast who have been sometimes denominated the "Northmen of the New World."

The substantial connection of the New World, at its north-western angle, with the Old World, contrasts in a marked way with its complete separation from the Old World in all other directions.—(*History of America*, ii, 74–76.)

"For my own part," remarks Retzius, "I have long been convinced of the consanguinity between the brachycephalæ of America and those of Asia and the Pacific islands, and that this characteristic type may be traced uninterruptedly through the long chain of tribes inhabiting the west coast of the American continent from Bering Straits to Cape Horn."—(*Smithsonian Report*, 267, 1859.)

Short says: "The origin of the North American population cannot be positively settled at present, though the probabilities are that new facts will be brought to light establishing the relationship of the ancestors of the Nahuas with some Asiatic race, as the Eskimo have clearly been proven to belong to the Arctic race, which encircles the globe near the north pole. We have seen that groups of facts unquestionably point to Northern Asia as the ancient home of a large share of the tribes of North America, civilized and savage."—(*The North Americans of Antiquity*, 516, 1880.)

Payne after noticing the migrations on the continent continues as follows: "In order to place this series of movements in its true light it is necessary to discuss briefly the general question of the origin and affinities of the aboriginal race; a topic eagerly debated ever since the discovery, but until the past forty years with no more positive result than the establishment of a general connexion with the races of northern Asia. The more fruitful researches of the last half century, while they confirm this view present it in a new and striking light. . . . Before proceeding to the physiological facts which establish this connexion, let us examine briefly the geographical relation between the northeastern extremity of Asia and the northwestern extremity of America. It is here that the New World and the Old, separated only by a shallow strait, most nearly

approach each other."—(*History of America*, ii, 64–66, 1899.) It is apparent that this author, although a believer in paleolithic man in America, derives the aborigines from the Mongoloid race, by way of Bering Strait.

Justin Winsor, in the chapter on "Pre-Columbian Explorations," written by himself, uses the following language regarding the origin of the Indians:

> There is not a race of eastern Asia—Siberian, Tartar, Chinese, Japanese, Malay, with the Polynesians—which has not been claimed as discoverers, intending or accidental, of American shores, or as progenitors, more or less perfect or remote, of American peoples; and there is no good reason why any one of them may not have done all that is claimed. The historical evidence, however, is not such as is based on documentary proofs of indisputable character, and the recitals advanced are often far from precise enough to be convincing in details, if their general authenticity is allowed. Nevertheless, it is much more than barely probable that the ice of Behring Straits or the line of the Aleutian Islands was the pathway of successive immigrations, on occasions perhaps far apart, or may be near together; and there is hardly a stronger demonstration of such a connection between the two continents than the physical resemblances of the peoples now living on opposite sides of the Pacific Ocean in these upper latitudes, with the similarity of the flora which environs them on either shore. It is quite as conceivable that the great northern current, setting east athwart the Pacific, should from time to time have carried along disabled vessels, and stranded them on the shores of California and farther north, leading to the infusion of Asiatic blood among whatever may have been antecedent or autochthonous in the coast peoples. It is certainly in this way possible that the Chinese or Japanese may have helped populate the western slopes of the American continent. There is no improbability even in the Malays of southeastern Asia extending step by step to the Polynesian islands, and among them and beyond them, till the shores of a new world finally received the impress of their footsteps and of their ethnic characteristics. We may very likely recognize not proofs, but indications, along the shores of South America, that its original people constituted such a stock, or were increased by it.

Professor O. T. Mason, in a very interesting discussion of the subject on a theoretic basis, in a paper entitled "Migration and the Food Quest: A Study in the Peopling of America" (in the *Smithsonian Report for 1894*), marks out as a possible route the island series from Kamtchatka to

some point on the shore of Alaska, in the region apparently of Queen Charlotte Islands.

Some data bearing upon the subject now under discussion, obtained by the scientists connected with the recent Jessup expedition to the northwest coast of America and nearby coast of Asia, may, so far as they have been published, be referred to here.

Jochelson, in the *American Anthropologist* (July-September, 1904), remarks as follows in regard to the recent investigations of the tribes of northwestern America and northeastern Asia, with special reference to the connection of the culture types of the two regions:

> All the peoples of Siberia, central Asia, and northeastern Europe whose languages are not of Aryan or Semitic origin, speak Ural-Altaic languages. This group, which contains about fifty peoples and tribes, consists of five branches, the Mongolian proper, the Tungus, the Turk, the Samoyed, and the Finn. The group was established and its branches were classified on the basis of linguistic indications, that is, on the similarity in the phonetics and morphology of the languages, by the Finnish investigator Castern, whose researches were conducted some sixty years ago. Anthropological and ethnological investigations subsequently confirmed this classification.
>
> However, there is a small group of tribes in northeastern Siberia which cannot be classed as belonging to the Ural-Altaic family for in spite of the fact that until recently this group has been investigated but little, Steller's work on the Kamchadal, written in the middle of the eighteenth century and remarkable for its time, and occasional records of various travellers on the languages and life of other tribes, point to the fact that this group cannot be classed among the family mentioned, but that it stands alone. The group includes the Ostyak and Kot on the Yenisei; the Gilyak and Ainu at the mouth of the Amur River, on the island of Saghalin, and partly in Japan; and the Kamchadal, Koryak, Chukchee, and Yukaghir in extreme northeastern Siberia.
>
> Ethnologists have designated the tribes of this isolated group as either "palæasiatics" or "hyperboreans"; but these names, invented for purposes of classification, have no intrinsic meaning. At best they may answer as geographical, but by no means as ethnological, terms.
>
> . . . . . .
>
> The study of these tribes, the necessity of which was long recognized by Russian ethnologists, was commenced under the so-called "Yakut Expedition," in which the present writer participated, and at the same

time the Jesup Expedition of the American Museum of Natural History undertook similar researches among them. The work of the latter expedition was based on the probability that in the remote past there existed some connection between the cultures and types of the Old and the New Worlds, and that for an understanding of the history of the American tribes it is indispensable to determine this connection. Therefore the attention of the expedition was directed, first of all, to the northern coast of the Pacific, the geographical and geological conditions of which must have facilitated intercourse between the tribes and helped their migrations from one continent to the other.

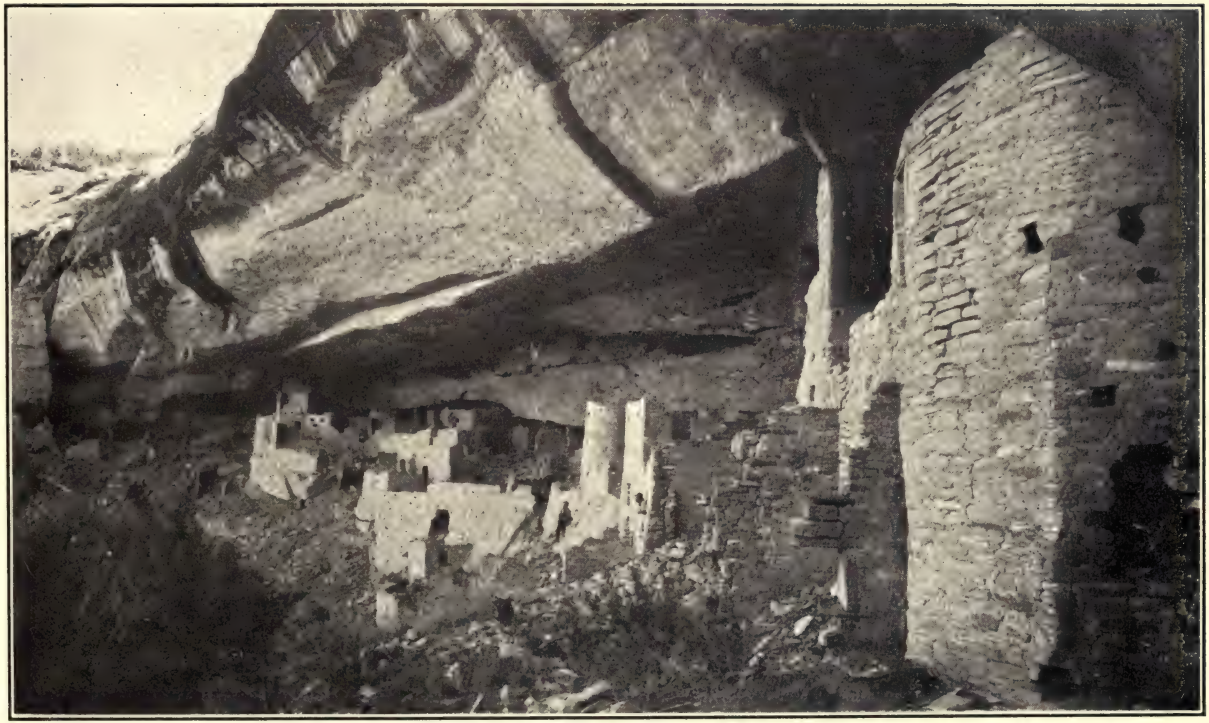
For this reason the investigation of the Koryak was included in the plans of the expedition. The results of this investigation have shown that the original hypothesis with reference to the kinship of culture of the isolated Siberian tribes with the American aborigines has been fully confirmed, and that the Koryak are to be regarded as one of the Asiatic tribes which stand nearest to the American Indian.

A scientist also associated with the same expedition, who has studied the natives of the northwest coast of America, and holds the same classification as Jochelson, suggests that at some time in the distant past the Ostyak, Ainu, and other members of the group, or their ancestors, were united and living together, at a remote date, in the region of Bering Strait; that they occupied areas on both sides, maintaining intercourse one with the other to a limited extent until the Eskimo appeared on the scene, driving them back on both coasts, thus breaking up the union. This theory, which is new, has much to be said in its favor, though open to certain objections. One of the latter is the early period to which these events must be assigned if the theory be accepted. It is now maintained by a majority of ethnologists and linguists who have studied the northern tribes, especially the Eskimo, that there has been in the past a movement of the latter, at least of those west of Mackenzie River, westward to and even in part beyond the strait. But it is admitted that there may have been, and probably was, an earlier and original movement from the Asiatic side. It was then that the isolated group mentioned above was scattered and driven from the region of Bering Strait.

This brings the Eskimo element into America subsequent to the entry of the Indian sub-race, which is the generally accepted order of arrival; nevertheless, if it is presumed to account for the peopling of America, or even of North America only, the date of the event must be assigned to a very distant period. But this is not inconsistent with the meagre data relating to the subject. On the Asiatic side, the group mentioned must have preceded, in the progress eastward of population, the Sinitic group. This would bring them to the northeastern section at least some three or four thousand years preceding the Christian era, possibly more. Time, therefore, does not appear to present a serious objection to the theory.

Although the discussion which follows will, in part, be based on the theory that the continent was peopled chiefly by way of the northwest coast, this will not be to the exclusion of the theory of other lines of entrance, as there are some difficult problems to solve on the theory of an exclusively northwest entrance. The civilization, tribal and linguistic diversity, northward movements, etc., of South American natives, which will not be discussed in this volume, appear to be more easily explained on the theory of an entrance on the south Pacific coast.

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## CHAPTER IV

### *NEOLITHIC MAN—THE PEOPLING OF AMERICA*

As PALEOLITHIC or glacial man in North America is yet a subject in dispute, an unsettled question, each side numbering among its supporters strong advocates, we allow the subject to remain in abeyance. Even admitting that the theory may possibly be correct, the evidence so far presented is not sufficient to advance it to that stage of certainty that will justify its use as the basis of further steps. We pass therefore to firmer ground and start with man in the neolithic or post-glacial age, as the earliest undisputed evidence of his presence in North America pertains to this age.

The chief restriction in attempting to determine the time of man's advent in America under the postglacial theory is that imposed by the decision of geologists as to the date of the close of the glacial era. This period was formerly believed to be very far back in the past, but the time has been much reduced by the recent estimates, from seven to twenty thousand years being now considered sufficient to cover the time that has elapsed since the ice sheet left the region of the Niagara gorge. Professor Gilbert, who has devoted much study to the subject and is accepted as high authority, is disposed to fix the date of retirement of the ice sheet from the region mentioned as late as some seven or eight thousand years ago. Of course, such estimates are tentative and subject to considerable modification; nevertheless, based as they are on different data, they serve to indicate approximately the initial date of the neolithic age.

But geological indications do not furnish the only guides in this estimate, as it is evident that time must be allowed for the characterization or unification of the race, whether this be attributed to descent from a limited group of one general type without modification through the intervention of exotic elements, or through the modifying influence of physical causes. But this may not have required the time generally allowed by ethnologists, if we may judge by the time which was required for the formation of the Polynesian race. Time must also be allowed for the distribution of population over the continent, and for the formation of the stock groups. This, however, is a process in regard to which it is difficult to arrive at even a theoretic time estimate; hence, opinions in regard thereto differ widely. It is also a subject which presents a problem exceedingly difficult to solve if the theory of original entrance at the extreme northwest only is adopted. The distance to be travelled to reach the southern extremity is a long one.

Payne says: "Movements of such importance as a definite abandonment, not merely of a particular site, but of a district in the midst of which a tribe has long been settled, are certainly not resolved upon without some knowledge of the district to which it is proposed to remove, and some assurance that it will be possible to effect settlement in it."—(*History of America*, ii, 61–2, 1899.) Nevertheless, this assertion will not hold good in all cases, nor will it apply generally to the original spread of population over the continent from the point or points of entrance. It is more likely that the suggestion by Sir John Lubbock (Lord Averbury) will define somewhat correctly this process, though subject to numerous exceptions:

"It is too often supposed that the world was peopled by a series of migrations. But migrations, properly so called, are compatible only with a comparatively high state of organization. Moreover, it has been observed that the geographical distribution of the various races of man curiously coincides with that of other races of animals, and there can be no doubt

that he originally crept over the earth's surface little by little, year by year just, for instance, as the weeds of Europe are now gradually but surely creeping over the surface of Australia."

Migration at that early day was largely governed by the food quest; growth of population and the pressure of numbers were later incentives to movements. The process was a slow one, and we should probably be justified in assuming, on the theory of entrance on the northwest coast, that portions of the temperate zone of North America had been occupied for a period reaching into thousands of years before the advancing pioneers reached the forests of Brazil and the plains of Argentina if the southern continent was peopled from the northern.

In regard to the time required to establish a new language, the opinions of philologists differ widely. Payne (ii, 99), speaking of the lapses in pronunciation noticed by Von Martius in persons belonging to the same tribe, says: "they are rapidly multiplied in a group which has quitted the parent stock; and thus, in the course of one generation, groups having a common parentage become unintelligible to each other. Each develops in no great while what is in substance a new language. The counteracting force of a comparatively wide general usage, the necessity of being intelligible to others who are only occasionally present to the speakers, disappear; and the natural tendency to change takes effect unchecked." On the other hand, Otto Stoll, who devoted considerable attention to the study of the Mayan languages, gives it as his opinion that the time required for the differentiation of the Cakchikel dialect was at least two thousand years. Assuming a medium between these two views, though the latter can be considered as but little more than a guess, it is still evident that the period for the differentiation of the various linguistic stocks must have been of great extent. Professor Thomas Wilson expresses his idea on this question as follows:

"The confusion of tongues and increase in the number of languages among the Indians is another evidence of their

antiquity. When the first colony of Indians appeared, whether by evolution or migration, they could have spoken practically but one language. Suppose, in case of migration, that they spoke many languages prior to their coming together on these, to them, foreign shores, after their arrival they would inevitably speak but one language. They would invent a common language if none existed. This would not be difficult for a colony small in numbers. With this for a starting point, we may see what they have done. They spread themselves up and down the valleys, across the rivers and over the mountains. While at first they may have retained their communication with the parent colony and kept up their original language, it continued only while those relations were maintained. When the offspring got so far distant that they did not visit the parent colony, and had no relation with its members, they invented their own languages, different from those of their ancestors, and this continued until they became a parent colony, sending forth younger colonies, which, in their turn, cut off their relations and invented new languages. So they went from east to west, north to south."—(*Antiquity of the Red Race in America*, Rep. Nat. Museum, 1042, 1895.)

If we could adopt the suggestion of Quatrefages, that population was introduced from various points in Asia and Africa, and perhaps Europe, the linguistic and ethnic distinctions would be readily accounted for without allowing so great a lapse of time; nevertheless, a sufficient time for the characterization of the race would be required. It is evident, therefore, that a long stretch of time, though within the limits fixed by geologists, is required on any theory, for development along the lines mentioned.

As our conclusions in regard to the steps of progress and development after man's advent into the New World must be largely theoretical, guided and limited by what has been learned of the natives and their remains, these, so far as they relate to the spread and distribution of population over the continent will be influenced very largely by the

conclusion reached as to the chief point or points of original entry. All theories in regard to the lines of primary migrations have behind them, whether expressed or not, a theory as to the point or points of entrance. Those who hold that the primary movements in the process of dispersion were from the north Atlantic coast have behind this opinion an idea of migration in some way from Europe; and so with those who advocate dispersion in other directions.

If man first appeared on the American continent after the close of the glacial epoch it is safe to assume, as has been stated, that he was not in the lowest stage of culture. If he came by Bering Strait or any point on the extreme northwest coast, he must have had a knowledge of the method of, and been equipped with, the means of obtaining food in that arctic region; he must, also, have known how to clothe and otherwise protect himself against the rigors of the severe climate. A higher degree of culture is required to exist in the habitats of the Eskimo than in the tropical regions where nature furnishes spontaneously to the hand food sufficient for existence, and clothing is a mere question of taste. If entrance was at some more southern point than Bering Strait, where ocean navigation was necessary, the knowledge of seafaring and vessel building implied thereby indicates a degree of culture somewhat above the lowest grade of savagery. Hence, under any theory as to the point of entry in postglacial times, the inference is that man at the date of entry was not in the lowest stage of savagery. That he was at original entry and throughout the prehistoric epoch in the Stone Age is proved by the material remains which have been discovered.

The struggle for existence in North America was somewhat different from what it was in the Old World. The variety of food plants in the latter which could be cultivated to advantage was greater than in America, though maize in its productiveness and ease of cultivation had no equal in the Old World. And the animal species available for domestication were much fewer in the former than in the

latter. The absence from America of all the larger domestic animals materially restricted land communication, trade and commerce, and prevented advance to greater perfection in agriculture. It is impossible to estimate with anything like approximate correctness what would have been the stage of culture at the time of discovery had the horse, the ox, and the sheep been found in America and domesticated at an early day by the aborigines. Unfortunately for him, the man of America had to make his way upward in the culture scale, if at all, without these aids, and without metallic tools, for his only implements were those which he could chip and grind out of stone, or fashion out of bone, horn, or wood.

This brings us to a consideration of the probable condition of the first immigrants during the early period of their existence on the new continent. Our allusions, however, will be to what relates only to North America as the items which relate peculiarly to South America are beyond the scope of the present inquiry.

Accepting for the present the prevailing opinion that man's first entrance into the New World was somewhere on the northwest coast, he must, as before stated, have understood the method and been provided with the means of procuring food, and of shielding himself from the cold, in that northern section. Though the landing of the first adventurers may have been at any point or points along the coast from Bering Strait to Columbia River we may safely assume that for a time they were coast dwellers, looking chiefly to the sea for food. This supposition is fully justified, as it is more than probable that these first incomers were shore people, maritime tribes which dwelt in the vicinity of the coast of the country from which they came.

In other words, it is not at all likely that the first immigrants were people directly from the interior of Asia, that they were people accustomed only to interior continental life. It is, therefore, wholly unnecessary seriously to consider theories which assume that the first people to enter

the new continent were from an interior group, accustomed to obtaining only such food as could be found in the interior of the continent. And this will apply to entry at any point. It is highly improbable that a tribe or people in the interior would leave their habitat and depart in search of a country across the sea of which they knew nothing, or of which they had heard only doubtful reports. They would not be prepared for a voyage on the sea, or for a coast life in the Arctic regions. It is, therefore, safe to assume that the original entry was by coast tribes, and that they dwelt along the coast of the new continent until offshoots gradually made their way into the interior.

From this conclusion, which seems to be fully justified, we can, if entry was on the northwest coast, which is assumed here, infer the character of their implements and something of their mode of life. Although it is probable, if not certain, that the first immigrants, the true primogenitors of the aborigines, were not Eskimo, yet, unless they reached the coast at some place in the south part of the temperate, or in the tropic zone, their habits and means and methods of procuring food must have been similar to those of the Eskimo or northwest coast Indians, until they began to move into the interior and to rely upon land animals and vegetable productions for subsistence. Their means of shielding themselves from the cold and the character of their dwellings must have been similar to those seen by the first Europeans who reached the northwest coast. The change from an interior to a shore life, and from a shore to an interior habitat requires many changes in details and in customs also, which must be taken into consideration in the attempt to trace theoretically the first steps in the process of peopling the continent.

It is probable, although the entrance may have been at any place on the northwest coast, or at the extreme northwestern point of the continent, that, after the newcomers had become firmly established and had developed in numbers demanding territorial expansion, the trend of movement was chiefly, or

in part, southward along the coast; while, on the other hand, offshoots made their way to the interior as they familiarized themselves with the means of obtaining food from the land. The food supply was the chief object in view in all the early general movements, and as there were no foes to contend with other than the wild beasts, rigors of climate, and physical impediments, the line which afforded an ample food supply with the least labor would be chosen. As the immigrants had been accustomed to draw their food supply chiefly from the water, their implements were those adapted to killing and securing the seal and other aquatic mammals and fish, the latter probably being their chief food. If the harpoon had not yet been invented, the spear in some form was undoubtedly in use, and the bow and arrow also, or if not at first, these were adopted as the new inhabitants began to make use of land animals for food.

Writers, even of recent date, treating of the origin of the Indians, have usually spoken in such broad and general terms that the difficulties which appear in attempting to follow them step by step theoretically from their supposed starting point, are not brought to the surface. To say that they came from Asia, or even from a particular Asiatic race or ethnic group, does not bring up the difficulties which appear when we follow them to the coast, watch their progress and note their landing amid new scenes and study their mode of life and their distribution in their new home. To do this, however, it is necessary to fix upon some section as the place of entrance or point of departure. It was probably in consequence of feeling this necessity in striving to follow out his theory that Lewis H. Morgan fixed upon the mouth of Columbia River as the point of dispersion, and Brinton, the eastern United States as the "area of characterization." From the same cause, Professor O. T. Mason, in his interesting paper on a theoretic "Migration and Food Quest" (in *Smithsonian Report*, 1894), has selected a limited section of the northwest coast as the region of arrival.

Continuing for the present our supposition that the original landing was on the northwest coast, we note the fact that to a large extent the region north of Columbia River is a mountainous coast intersected by innumerable sounds and fiords and studded with islands large and small. Thus intercourse along the coast is generally easy for water transit, while access to the interior is difficult on account of the rugged hills. Several fiords and rivers cut deep into the mainland, and the valleys which open into them offer the chief pathways of intercourse between the coast and the interior. The land is forest covered, where, besides the numerous berries which furnish vegetable food, deer, elk, bear, and other animals abound; but the staple food of the Indians of this northwestern section has been obtained from the sea and the rivers. Hence, the implements and means of obtaining food and mode of life were adapted thereto.

The articles of stone formerly in use in this section were, as a general rule, similar to those of the Eskimo, the chief exceptions being the carved slate articles of the Haidas on the one side, and the stone pots and great stone lamps of the Eskimo on the other side. Professor W. H. Dall, who explored some of the shell heaps of the Aleutian Islands, discovered rude stone hammers, probably used for breaking *Echinus* (star-fish) tests; supposed net sinkers, stone knives, and spear heads, both of stone and bone; stone, bone, and horn skin dressers, bone awls, stone adzes and lamps, and stone and bone labrets. With the exception of the lamp, the articles named were also in use at some time in the prehistoric past among the coast tribes of Alaska.

Although comparatively few arrow and spear heads from the northwest coast are found in collections, yet it is known that considerable numbers have been obtained at certain points in that section. The use of masks in ceremonies, dances, etc., has been an important custom among the tribes of the northwest coast since they came into notice and must have come down from the prehistoric age. Their use prevailed also in Mexico and Central America, though not

among the Eskimo of Greenland. The latter fact points possibly to their relatively late introduction.

The most advanced culture of this northwest section was among the Haidas, who have inhabited Queen Charlotte Islands from prehistoric times. Besides considerable taste in colors, they were advanced in the art of drawing; and their carvings in wood and slate show a high degree of culture in this respect. Our chief interest, however, lies in the figures which they carve in slate and wood, weave into their textile fabrics, paint on their dwellings, and tattoo on their bodies, as many, perhaps most, of these designs are survivals from prehistoric times, and tell us something of life in this somewhat isolated section in the far distant past.

These figures were chiefly semi-mythical, although based in most cases on real animals, especially those of the sea, the owl, raven, and bear being the chief exceptions. However, true life forms are very rare in these figures, which are, when not purely imaginary, parodies on nature, and are to a large degree symbolic. The strong, general resemblance which many of them bear to some of the carved designs of Central America is too apparent to be overlooked, whatever may be the explanation. This resemblance has been frequently mentioned. The method of bounding and grouping the various symbolic figures, or individual pictographs, reminds us of the Maya hieroglyphic writing and sculptured inscriptions. The superimposed square faces in the ceremonial robe of the chief are almost exact repetitions of the square conventionalized face series seen in the sculptured façades of some of the ancient Yucatec structures, as on Casa de Monjas, the sculptured front at Kabah, etc.

Payne remarks as follows in regard to the art of this section: "These tribes carve admirably in wood, horn, walrus ivory, and a black argillaceous stone; nor do they limit themselves to the imitation of natural objects. They excel in the fanciful and grotesque: in placing the human figure in strange postures, intermingling it with devices partly original, partly borrowed from animal and vegetable forms;

they have acquired that distinctive and somewhat conventional manner commonly described by the term 'style.' What is most striking is that this style approximates so nearly to the characteristic style of Mexican [Mayan] sculpture that those who visit the British Columbian coast, immediately after travelling in Mexico, at once recognize perforce the resemblance between the two. Nor is it possible to doubt the substantial identity of the idol forms of Mexico, so familiar to the student of the pinturas, with those still found in the Haidah lodges. One traveller draws from facts of this kind the opposite inference to that deduced by ourselves; he argues that the Haidah Indians must have emigrated to their present seat from Mexico or Central America."—(*Hist. America*, ii, 415–416.)

Lieutenant A. J. Niblack, in his excellent paper entitled *The Coast Indians of Southern and Northern British Columbia*, mentions and figures many of the implements formerly in use among the people of this section. Among these are stone hammers or sledges of different sizes and forms, comparatively rude, but in a number of instances hafted; stone mortars and pestles, doubtless for bruising seeds and nuts; stone adzes, much like what are called "celts" in more southern sections, but which appear to have been hafted as adzes, precisely as the Eskimo use them. He also notices and figures stone knives with horn handles, stone and bone scrapers, and stone chisels mounted on wooden handles. Nephrite or jadeite daggers, well polished, were not uncommon, and there is evidence that those of copper were made in some instances before intercourse with the whites.

Although the bow and arrow were of the greatest use to the Aleuts and Eskimo, they have, according to Niblack, been only auxiliary hunting implements among the northwest coast Indians. The arrow heads were of bone, flint, and shell, occasionally of copper. The spear, however, was prominently in use both in war and in fishing, those for the latter purpose being chiefly of bone, sometimes notched so

as to form a kind of barb. The people of this section, who spent much of their time upon the water, were noted for their canoes; those of the Haidas, dug out of the trunks of great cedar trees, reaching sixty feet in length, six and one-half in width, and four and one-half in depth, were capable of carrying a hundred men. The Bellacoolas and Indians of other neighboring tribes had discovered at an early day the art of basket making, and have been noted for the manufacture of baskets, as well as of hats and watertight vessels, from cedar roots.

Armor protection for the body appears to have been in use from remote times among most of the tribes of the northwest coast, from the Haida territory northward and to some extent southward. It is worthy of notice that similar armor was also formerly worn by the tribes of northeastern Asia, as far south as Japan. This was sometimes made of cedar slats, or slats of other wood, and was worn both in front and on the back. In other instances it was made of slender rods, woven together in such a manner as to be readily pliable. Hides were also used for this purpose, and, according to D'Orbigny (*Voy.*, 579), they were sometimes of rushes; and Captain Cook (as quoted by Hough) makes mention of the armor of this section in his day as follows:

> They incase almost the entire body in wooden or leathern armor. They make a breastplate of wood and an arrow-proof coat of thin, flexible strips bound with strings like a woman's stays. They wear helmets with curiously carved visors.
>
> A kind of jacket, or coat of mail, is made of thin laths bound together with sinews, which makes it quite flexible, though so close as not to admit an arrow or dart.—(Walter Hough, *Primitive Armor*, in Rep. U. S. Nat. Museum, 637, 1893.)

One specimen of this armor in the United States National Museum shows the symbolic figures so characteristic of the northwest coast.

Although it is probable that Bering Strait was the chief point of original entry, yet the customs, mode of life, implements used, etc., were doubtless similar to those described,

which point to the prehistoric life of the Haidas, Tlinkit, Koluschans, and other northwest coast tribes. It is, of course, not claimed that these tribes were the first that reached this section, it being more likely that others had preceded them, who, yielding to pressure, had passed on, while others took their places. Nevertheless, it is evident that the historic tribes have remained here a long time, at least long enough to become adapted to the physical conditions of the region, and no doubt present many of the characteristics of the first arrival.

The Tlinkit have a tradition that they migrated in the past from some point in the interior opposite Queen Charlotte Island. Moreover, there were seen by the first European explorers evidences of warfare, showing that the people of the section had to battle for their position. Ancient villages discovered by Vancouver in Kupreanoff island were situated on the summit of a precipice, or steep insular rock, rendered by nature almost inaccessible. These positions, in addition to their natural advantages, were strongly fortified with a platform of wood on the most elevated part of the rock, and projecting so far at its sides as to overhang them. The edge of the platform was barricaded with logs of wood placed one on another.—(Volume II, 396.) In some instances houses were placed on high posts in the margin of the sea. It is probable that the principal object in view in forming these fortifications was to enable the women and the few men, mostly old, who remained at home while the others were on fishing or hunting excursions, to defend themselves against the sudden attacks of enemies. At any rate, they throw a ray of light on the prehistoric times of this section.

We have proceeded on the supposition that the first colonies were established on the coast, yet it is possible, and indeed probable, if Bering Strait was the point of entry, that when migration began there were two lines of movement, one southward along the coast, and the other, possibly the larger, more inland, behind,—that is, east of the mountain

range. However, there must have been at an early day, and even down to the dawn of American history, a strong tendency of the interior tribes of this northern interior section to come to the coast. This is indicated by the tradition of the Tlinkit already mentioned, and by the traditional movements in the same direction of several other northwestern tribes, and by the large number of minor stocks crowded along the Oregon and California coasts mostly from the interior.

It has been asserted that a great number of languages and dialects spoken in a given region by a sparse population is one mark of the prevalence of a rude and primitive tribal society, and in conformity with this view the region of California, Columbia River and the shores of Puget Sound has been pointed to as the locality where the lowest stage of native culture in North America was found. The Athapascans of northern British Columbia have also been considered as on but little, if any, higher culture level. Those counted as among the lowest of the California tribes, the Paiutes, were probably intruders of comparatively recent prehistoric times. Nevertheless, there is reason, as will appear, to believe that the Indians of California, at least in part, were more advanced in the culture scale in prehistoric times than at the advent of the whites.

If we pass over the mountains to the east we enter upon the broad region extending eastward to Hudson Bay, of which the drainage area of Mackenzie River constitutes the larger portion. This interior northern region has been occupied chiefly by Indians of the Athapascan stock from the earliest date to which history or tradition reaches. Although the archæological remains are few, and tell us comparatively little of the ancient customs and distant past of this ethnic group, yet the stock is one of great interest to the philologist and antiquarian in another respect. The scattered offshoots tell us beyond question of extensive movements in the past. There are some two or three small outlying colonies on the coast of Oregon and California, while a southern group of the stock known as Apaches,

Navahos, and Lipans formerly spread over the larger portion of Arizona and New Mexico, and extended for a considerable distance into northern Mexico, the Lipan division reaching down to the lower Rio Grande.

The archæological remains of the northern section consist chiefly of rude or partly polished stone implements. Some of the tribes had made more advance in this respect than others, yet it is said that their finest specimens were obtained by barter from the seacoast Indians. Their so-called stone axes, which were really rude celts, were, when hafted, adzes. The Dené, or northern Athapascans, used this implement in the same manner as the Eskimo, who even rehafted the axes and hatchets they obtained from the whites, so as to form adzes of them.

The other stone implements of this region consisted almost wholly of arrow and spear points, scrapers, and knives of the usual forms. A few pestles have been found, and also a kind of, supposed, stone war club. The Rev. A. G. Morice, who has resided for many years among these northern tribes, thinks that the prehistoric Dené made but scant use of copper, though it was not unknown to them. Petitot, who also resided among them and made a study of their language, says that previous to the arrival of the whites in the valley of the Mackenzie, two of the tribes, the Yellow Knives and Dog Ribs, made use of native copper, which they obtained along Coppermine River, but that some of the articles, or the copper out of which they were formed, would appear to have been obtained from the coast Indians. Pottery and clay articles were unknown to them.

The chief interest in studying the tribes of this stock in reference to prehistoric times relates, as before intimated, to the evidence furnished by their distribution, of the lines and general course of migrations on the Pacific side of the continent. It is necessary only to mention the fact that the Hupas of California, the Navahos and Apaches of Arizona and New Mexico, the Lipans near the mouth of Rio Grande, and certain small tribes on the coast of Oregon, are offshoots

or divisions of this family and close relatives of the Dené of British Columbia and Alaska to make evident the extensive migrations which must have taken place in the past. That the general direction was southward is not only universally conceded, but is indicated by the dialects, traditions, and the strong improbability that the large body at the north had deliberately abandoned the more genial clime of the south and made their way into the inhospitable regions of the north, where the cultivation of maize, which they would have learned, was impossible.

Although it is probable that the character of northwest coast life in prehistoric times was substantially as mentioned, and must have been that of the primary colony if the first entry was in this northwest section, yet the comparison with the life, customs, and peculiarities of the people of northeastern Asia, to find indications of origin, brings up a question which has not received sufficient consideration. This comparison can only be between the customs of the peoples of both coasts in historic times, or in prehistoric times so far as traditions and other data reveal them. Have the same tribes or peoples of the same ethnic group occupied these opposite sections of the two continents since the first entry into America? Although it is probable that the increase in population was comparatively rapid so long as an unoccupied field lay before them in their progress southward and eastward over the continent, yet the time required to bring about the conditions existing at the date of discovery must be counted by thousands of years. So far as the conditions on the Asiatic side are concerned, we may be justified in assuming that the same type, the same race or sub-race, now inhabiting the northeast section occupied it far back in what is counted the prehistoric era in America. From five to six thousand years may perhaps be assumed without its being considered an extravagant estimate. That there have been in that time much shifting of tribes and changes in customs and modes of life in that section must be admitted, yet the general type has remained the same.



Figure representing one of the dual deities in the religion of the Mayas. *Given in "Antiguedades Mexicanas" as from a bas-relief found in Copoya de Chiapas.* (*Doubtful.*)


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Turning to the American side, will not similarities in customs, myths, implements, etc., of the tribes of the northwest coast with those of the northeastern Asiatic tribes, unless found to some extent among all the tribes of America, indicate a much more recent entry than that of the first immigrants? This appears to be the legitimate conclusion, unless these peculiarities in customs, etc., be attributed to physical causes. While we would not deny the probable correctness of the deductions usually drawn from these comparisons, we call attention to the above inference, which seems legitimate. If the comparison of physical types, or comparison in any other respect which applies to the American race as a whole, shows similarities, these may be legitimately used as indications of the origin of the Indians. If, however, they apply only to certain tribes or Indians of a given section, they would seem to point to a more recent immigration or a longer continued permanency than is usually allowed. There has been perhaps too strong an effort on the part of some of the ablest students of this question to limit the origin to one entry or to one period, or, in other words, to deny the probability of entry at various periods. There is, nevertheless, one suggestion which may not be out of place here. People seem, in some sections, to be much like plants: the species adapted to a locality live on despite storms, fires, floods, and drought, as long as there is a root to spring up and keep the race alive.

Some resemblances in the designs and forms of this region to those of Central America have been mentioned; and we may add here that, on the other hand, there is a somewhat remarkable similarity between the figure types of this coast section and those of the South Pacific islands, a resemblance to which attention has frequently been called by writers, even by those who draw no inference therefrom as to affinity or intercourse between the peoples of the two sections. Lieutenant Niblack, in the work already mentioned, calls attention to the New Zealand custom of erecting totem posts near their dwellings, as do the northwest coast Indians,

and also to the strong similarity in type. In both are seen the custom of carving symbolic figures, one above another. What is the correct inference to be drawn from these facts is difficult to determine, and what increases the difficulty is that nothing similar is found on the Atlantic side. We can only say, with Professor Dall, that what may be termed this Pacific culture seems to have been "impressed" upon the west coast tribes of America, though "how" it has been impressed is as difficult a problem to solve as the first.

But few mounds have been observed in this section. Mention is made of some near Comox, one hundred and thirty miles northwest of Victoria, some of which contained skeletons and shells. Shell mounds are described as abundant on Vancouver Island, from which stone hammers, arrow points, spear heads, stone knives, needles, and awls of bone, and a few stone mortars, have been obtained.

## CHAPTER V

### *THE FIRST STEPS IN THE NEW WORLD*

ALTHOUGH inclined to the opinion that one point of original entry was on the northwest coast, probably Bering Strait, we are by no means prepared to assert, as will appear further on, that it was the only place. The object at present in view is to set forth the general results of the investigations relating to the prehistoric times of North America rather than to impress personal views upon the reader, though we shall express them freely. That the general trend of movements on the Pacific slope in the past has been southward is now almost universally conceded, regardless of opinions as to the origin of the Indians. Can we follow the wandering bands and study their development as they make their way into the interior and toward the more southern regions and milder climate—regions occupied before their coming only by wild beasts? The traces, it is true, have been effaced to such a degree by the slow movements of succeeding hordes that we can only judge by the indications which the latter have left as to the former. Few important tribes, as well as few kingdoms, have vanished without leaving some trace, direct or indirect, of their existence.

Writers devoting attention to prehistoric America have usually confined themselves to general terms in expressing their views in regard to the steps of the process in the distribution of population over the continent. Where there is so much uncertainty, as in regard to this question, and conclusions must be chiefly theoretical, the truth can be

approached more certainly by elimination than by direct steps; hence if details are given it is possible to eliminate some as inconsistent, or otherwise untenable views, while indefinite generalities afford no means of such process.

Brinton, who was a strong advocate of the theory of glacial man, specifies the area of "characterization" of the race as follows:

> Of course it would not be correct to suppose that the earliest inhabitants of the continent presented the physical traits which mark the race to-day. Racial peculiarities are slowly developed in certain "areas of characterization," but once fixed are indelible. Can we discover the whereabouts of the area which impressed upon primitive American man—an immigrant, as we have learned, from another hemisphere—those corporeal changes which set him over against his fellows as an independent race?
>
> I believe that it was in the north temperate zone. It is there we find the oldest signs of man's residence on the continent; it is and was geographically the nearest to the land-areas of the Old World; and so far as we can trace the lines of the most ancient migrations, they diverge from that region. But there are reasons stronger than these. The American Indians cannot bear the heat of the tropics even as well as the European, not to speak of the African race. They perspire little, their skin becomes hot and they are easily prostrated by exertion in an elevated temperature. They are peculiarly subject to diseases of hot climates, as hepatic disorders, showing none of the immunity of the African. Furthermore, the finest physical specimens of the race are found in the colder regions of the temperate zones, the Pampas and Patagonian Indians in the south, the Iroquois and Algonkins in the north; whereas, in the tropics they are generally undersized, short-lived, of inferior muscular force and with slight tolerance of disease.
>
> These facts, taken in connection with the geologic events I have already described, would lead us to place the "area of characterization" of the native American east of the Rocky Mountains, and between the receding wall of the continental ice sheet and the Gulf of Mexico. There it was that the primitive glacial man underwent those changes which resulted in the formation of an independent race.—(*American Race*, 34–35, 1891.)

It is apparent from this and other statements in the same work that Brinton places this characterization or unification of the race directly after the close of the glacial epoch, and that he derives the entire population of the continent from those he gathers in this "area of characterization," but he

fails to give any steps of the process of distribution. The result upon this theory would be much the same as upon the theory that man arrived on the continent immediately after the close of the Ice Age. The place of entry would vary to some extent the lines of migration north of the Isthmus of Panama, but not necessarily south of it. A study, however, of this author's statements quoted will show most or some at least of them, and the theory also, to be untenable.

Following the usual assumption that the chief point of entry was on the northwest coast, as it affords means of consistent illustration of the movements and process of development and steps of distribution of population on the Pacific side of the continent, attention will next be called to the monuments and other records of prehistoric times in California and the regions south and east.

As our conclusions as to the customs and prehistoric life of the native population are necessarily based very largely on archæological data, it is proper to state here that a careful study of the data so far obtained, with special bearing on the question of the archæological sections of North America, leads, in the first place, to the conviction that the ancient remains and prehistoric types belong, in a broad and comprehensive sense, to three general classes, each limited to a given geographical section. One of these classes is limited geographically to the Arctic region or Eskimo area; a second, to the Atlantic slope; and the third, chiefly to the Pacific slope, the eastern range of the great divide to the Rio Grande forming approximately the dividing line between the latter two. According to this division, the Atlantic section includes that part of the continent east of the Rocky Mountains and north of the Gulf of Mexico and the Rio Grande, except the country of the Dené, or northern Athapascan group; and the Pacific section, which includes the remainder of North America from the Arctic area to the Isthmus of Panama.

These sections and their dividing lines correspond very closely to the geographical arrangement on another basis.

If we take Major Powell's Linguistic Map, accompanying the *Seventh Annual Report of the Bureau of American Ethnology*, and trace a line from the mouth of the Rio Grande northward along the east range of the Rocky Mountains to the headwaters of the upper Saskatchewan, and thence eastward to Hudson Bay near the mouth of Churchill River, we shall find that this line, which marks the division between the eastern and western groups of linguistic stocks, corresponds almost exactly with the line between the eastern and western archæological sections, as given above.

Although there are marked differences in types and character of the prehistoric works and remains of different districts within each of these two comprehensive sections, yet when those of the Pacific slope, as a whole, are compared with those of the Atlantic slope, there are differences which mark them as the products of different ethnic groups or as the results of different influences.

The method of progress and character of the movements by the original colonists in their early days and their social organization had much to do with tribal distribution. If gentile organization existed at the time of arrival or was adopted soon thereafter, it is more than likely that dispersion in quest of a food supply, or from any cause, was by clans or gentes. As marriage was prohibited within the clan or gens, it is quite probable that two of these social groups remained in reach of each other. Hence, the dispersal was doubtless much after the manner described by Professor Wilson in the quotation from his paper on the antiquity of the American Indian in the preceding chapter, the separating groups being determined chiefly by their social organization. The divisions of some of the Athapascan tribes to-day, especially on Yukon River, and their movements, are based to some extent on social organization. In almost every band, however small, there are families from two or more clans.

Although Sir John Lubbock's opinion that distribution was a slow and very gradual process of spreading over the

land is probably correct in the main, yet there have been marked exceptions. The migration of the southern Athapascan tribes, and also, as we shall show, of the Nahuatlan stock, proves that while increase of population may have very generally caused extension in early days into unoccupied areas, and brought pressure to bear on neighboring bodies and consequent shifting of position, there were also real independent tribal migrations to longer distances. Original distribution was, in fact, a complicated process, hence it is unsafe to assume any particular type as that on which to base general theories; the fact of movements and spread of population can, of course, be asserted, and often special types may be assumed from the data.

Justin Winsor, speaking of the progress of settlement on the Pacific side, chiefly Nahuatlan, says: "When by settlement after settlement, each migratory people pushed further south, they finally reached central Mexico, etc."—(*Narr. Crit. Hist. Am.*, i, 138, 1889.) Short (*North. Amer. Antiq.*, 512, 1860) believed that migration was southward from Alaska along the coast to Oregon and the Columbia River region, but that here the stream, chiefly Nahuatlan, divided, one part passing up the Columbia and down the Missouri, becoming the mound builders; while the other division passed on to Arizona and New Mexico, and were the authors of the Pueblo structures and cave dwellings, and thence moved on, to become the Mexicans conquered by Cortés. Sir J. W. Dawson gives a migratory map in his *Fossil Man* (48), showing his belief that, omitting the Eskimo, the general movement on the western side of North America was southward as far as Central America, while on the Gulf side the stream flowed northward, peopling all the region east of the great plains. In the Arctic section, he marks the course of movement as eastward from Bering Strait to Greenland.

In studying the ethnology of the section embracing Oregon and California we are surprised, as before mentioned, at the large number of small linguistic stocks which

are crowded in this area, some twenty-five or more being marked on Major Powell's linguistic map. Although mention of this fact has been made in a previous volume of this series (ii, 381–2) it is alluded to here for its bearing on the prehistoric conditions in this area. It is suggested there that these family groups were always small, which is probably a correct conclusion. That all, or at least the larger number of them, came from more northerly or northeastern sections is clearly indicated by tradition, language, and other data. Powers, who made a careful study of the California tribes, not only makes mention of movements from the north toward the south, but gives as his conclusion, based on his personal investigations, that such has been the general course of migration in this section, and speaks of it as a point well established.

Although the evidence is satisfactory that the ancestors of the tribes of Oregon and California came from the north, it by no means necessarily follows that they were offshoots from the shore tribes of southern Alaska; in fact, the indications point rather to the interior of British Columbia as the home of the ancestors of the tribes south of Columbia River.

Turning to the archæological data of this section, which are comparatively few, we gain therefrom some knowledge of the life and customs of the people in the prehistoric era. The condition of the natives at the first appearance of the whites on their coast, which furnishes some indication of their past mode of life, is thus described by Hubert Bancroft in his *Native Races of the Pacific States.*

"Those," he asserts, "who have seen them unanimously agree that they, of all men, are lowest. Lying in a state of semi-torpor in holes in the ground during the winter, and in spring crawling forth and eating grass on their hands and knees, until able to regain their feet; having no clothes, scarcely any cooked food, in many instances no weapons, with merely a few vague imaginings for religion, living in the utmost squalor and filth, putting no bridle on their passions,

there is surely room for no missing link between them and the brutes."—(*Nativ. Rac.*, i, 440–1, 1886.)

This is a dark picture, perhaps a little too deeply colored, though substantially correct, but it is probable that it is more applicable to the natives at the opening of the historic period, than during the later prehistoric era; moreover, it applies chiefly to the Paiute, or Digger, Indians. Powers, in his work on the California tribes, presents a number of reasons for believing that the historic tribes were deteriorated descendants of more advanced ancestors; or, successors of a more cultured people. This he argues from the better finish of the stone implements of the preceding age. The prehistoric stone mortars were carefully dressed on the outside and of three types, while those of modern times are boulders hollowed out and left rough on the outside. The old pestles were well dressed, regular in form, and sometimes embellished with rings, while those of recent date are slender cobbles from the brook. Some of the finest specimens of chipped stone knives found north of Mexico are from the prehistoric remains of California, while the modern Indians seem wholly incapable of shaping them. Powers mentions other contrasts, but these are sufficient to justify his opinion. Nevertheless, while they indicate retrogression in art, this applies more to quality and finish than to types, as those articles found in use at the coming of the whites were similar in type to those which remain from the prehistoric age, a fact which indicates the presence of the same ethnic element.

It is noticeable that, as we move southward through Washington and Oregon into California in our search for prehistoric data, there are manifest changes. The mortar becomes more and more common, indicating a larger use of seeds and vegetable foods. Pecked and polished stone implements become more numerous, and the variety of chipped implements increases. By the time southwestern Oregon has been traversed, chipped implements of agate, jasper, obsidian, and sandstone, some of them finely finished

specimens, have been observed, as arrow and spear points of almost every variety, knives and scrapers. Other stone articles, as pestles, perforated disks, cylindrical pipes, mullers, paint cups, etc., have also been discovered. From burial places near San Luis Obispo, California, Paul Schumacher unearthed pots carved out of magnesian mica, many sandstone mortars, and quite a number of bowl-shaped and olla-form vessels, neatly worked, with the surface well polished. Some of the ancient bowls of this region and other parts of the State show a strong resemblance in form to the pottery ollas of the Pueblo region. From the account of some excavations made near Santa Barbara by the party under Lieutenant Wheeler, the following information in regard to ancient burials and the objects discovered is obtained. These burials were not in mounds, but in graves, where the surface of the ground presented no unusual features except that it appeared to be slightly depressed at these points, and that here and there ribs and vertebræ of whales protruded above the soil.

"Two feet below the surface the first indications of burial were reached, quantities of broken bones being met with at every stroke of the spade, interspersed with pieces of whales' bones and decaying redwood. At a depth of five feet, the first entire skeleton was found in position, and near it several others were subsequently uncovered; in all of them the head fronted northward, the face was downward, and the lower limbs were extended. Over the femur of one of the skeletons was a flat plate of steatite, a sort of soapstone, twelve or fourteen inches square, with a hole in one end, which was called a 'tortilla-stone,' its probable use having been for cooking cakes, or tortillas, or else for heating water, the hole in the end serving to draw it from the fire when thoroughly heated. In the rear of the skeleton, and to one side of the plate, was an olla, or jar, of steatite, broken, but containing some fine glass beads and human teeth; and behind this, a stone pestle of symmetrical shape, about three feet in length, of a hard species of sandstone,

and another plate of steatite, and two large ollas of over five gallons capacity, their mouths or apertures fronting north; and just above was a single cranium facing the cliff, face downward, and on top of it a single femur. Continuing the excavations toward the cliff, a small sandstone mortar was exhumed, containing a mass of red paint, and in its immediate vicinity a large number of beads of glass and shell, with ornaments made from the lamina of the abalone shell, which is common on this coast, being found in great abundance on the islands some twenty miles distant. Digging still farther, other skeletons were found in similar positions, but in many instances the lower limbs were flexed upon the body, while in a few cases the fingers of the right hand were in the mouth. One skeleton was that of a child, near which were found beads, ornaments, tortilla-stones, and two more ollas, one of which contained portions of the cranium of a child. This skeleton had apparently been wrapped in a kind of grass matting, as small portions were found attached to the bones and scattered near by. In the olla containing the head bones of the child were a great number of small black seeds, smaller than the mustard seed, which were recognized by one of the laborers as a seed used by the present California Indians and natives in making demulcent drinks and eye-washes.

"In one trench, a number of crania bones were found, in similar positions to the first met with, and also several fine ollas, tortilla-stones, mortars and pestles. All these utensils were invariably in the immediate vicinity of the heads of the skeletons; in fact, in many instances, the crania were covered by large mortars, placed orifice down. In the second trench, digging was in an easterly direction, and the first discovery was that of a skeleton and a fragment of iron near the right hand, probably a knife or spear-head, which, archæologically speaking, was a source of great grief to us, our hope being that no remnants of Spanish civilization would be found in these graves. It could not be helped, however, though a great deal of prehistoric romance

was at once destroyed. Near this skeleton was another, and by its side the first pipe met with, which was similar in appearance to a plain modern cigar-holder, and consisted of a tube of the stone called serpentine, eight inches long, the diameter of the wider orifice being a little over an inch. At the smaller end was a mouth-piece, formed from a piece of a bone of some large water-fowl, and cemented in place by asphaltum. How these pipes were used with any degree of comfort it is impossible to surmise.

"Continuing this excavation, the next discovery was a steatite olla containing a skull, differing in many respects from those found in the graves; if from one of the same tribe, it shows marked differentiation. Near the olla was a large sandstone mortar, over two feet in diameter, and behind it another olla, containing more bones, and another pipe, 10½ inches in length, and near this latter article a smaller olla filled with red paint. It should have been mentioned that from this trench was procured a femur, showing evidences of fracture through the neck of the bone, which had become absorbed, the head uniting to the upper portion of the shaft between the greater and the lesser trochanters. Further search revealed at the same depth a mortar, covered by the shoulder-blade of a whale, which also contained the skull of an infant, covered with an abalone shell, while near by were paint, a piece of iron, a nail, and various shell ornaments and beads. Near at hand, to the rear, were a broken mortar and pot, underneath which was a small olla, the whole covering the skull of a child; and a little deeper, a skull resting upon a fine, large, pear-shaped steatite olla, the outside of reddish color. These remains appear to have been inclosed in a sort of fence, as plank and stakes of decayed redwood were near by. At the bottom of this trench, just above the firm clay, and under all the specimens just described, was a fine sandstone pestle, 17½ inches in length.

"Continued in the same trench, advancing in a northerly direction toward trench No. 1. At a depth of four feet

were two skeletons, and near them was a square cake of red paint; alongside were two more skeletons, over one of which was a large mortar, mouth downward, and close by another similar utensil. Under this skeleton were an instrument of iron fourteen inches in length, a long iron nail and two pieces of redwood, much decayed. A little farther in was a small canoe, carved from steatite. All the skeletons were face downward, heads to the north. In trench No. 1, the digging was continued in a southerly direction. The first object encountered was an enormous mortar, twenty-seven inches in diameter, with its pestle near by. This article was on its side, the mouth toward the south; around it were no fewer than thirty crania, some in a fair state of preservation, and others very friable, broken and worthless. Lying on top of this mortar, on further removal of the earth, was an almost entire skeleton, with fragments of long bones and of steatite pottery. As surmised by some of the party, the perfect skeleton was that of a chief, and the remains those of his slaves slain with him, which is at least a possible, if not a plausible, view of the case."

The presence of iron and glass articles in some of the graves shows contact with Europeans at or before the time of burial; and the general similarity in type, though inferior in finish, of the articles found in these graves to those from the most ancient graves, seems to prove connection by descent, and that they were made by people having the same general customs, though they may have belonged to different stocks. The strong similarity in the customs of the Indians of this section in historic as well as prehistoric times, though embracing so many linguistic stocks, is due chiefly to environment and the character of the food supply, possibly in part to some undetermined cause belonging to the distant past.

Other differences between the customs, etc., of the California section and those of the coast natives north of the Columbia, other than those indicated by what precedes, are found in the absence of the labret so common at the north

and the absence, to a large extent throughout the district and wholly in California, of the painted and carved symbolic figures and totem posts of the Haidas and other northern tribes. These and many other items which show wide differences between the natives of the California district and those of the coast region further north, indicate that California has not been peopled from the north coast, but from some interior section. This supposition is strengthened by the fact that three or four of the colonies of the California and Oregon coast are offshoots of the Athapascan group, which made their way over the mountains by the course of Frazer River and other passes. This idea is strongly advocated by Gibbs, who devoted considerable attention to the study of these tribes, and expresses his opinion on this subject as follows:

"If I may hazard a conjecture at present, it is that the Tah-kali [Dené] and Selish families, with perhaps the Shoshone and some others, originated east of the Rocky Mountains; that the country between that chain and the great lakes has been a centre from which population has diverged; that these two tribes crossed by the northern passes of the mountains; and that their branches have since been pushing westward and southward. Whether the southern branches of the Tah-kali have been separated and driven on by the subsequent irruption of the Selish, or whether they have passed over their heads, can, perhaps, be ascertained on a severe comparison of the different dialects into which each has become divided; it being reasonable to infer that those which differ most from the present are the oldest in date and emigration.

"The route of the Selish has obviously been along the courses of the two great rivers, the Frazer and the Columbia. By the former, they seem to have penetrated to the sea, while on the latter they were stopped by the Sahaptin and the Tsinuk. Some branches undoubtedly crossed the Cascade range, at different points, to the Sound, and the country intermediate between that and the Columbia. And

the Tilamuk have overstepped that boundary and fixed themselves on the coast of Oregon."

The fact that Dr. Gibbs was able to trace with considerable certainty the lines of migration of some of these western tribes across the mountains from the interior of British America,—for the lines of movement indicate that as the section of original occupancy,—corresponds with all the other data we have obtained in regard to the origin of the California and southern Oregon tribes. They do not appear to have come from the coast region north of them, as the peculiar characteristics of the people of that section, though found to some extent in Mexico and Central America and even in South America, are wanting in California and southern Oregon. The most reasonable conclusion appears, therefore, to be, that these numerous small stocks are minor groups or tribes which have separated from larger groups in the interior, along the eastern base of the dividing range northward, or in some instances independent, already segregated tribes, which have made their way to the coast and by long separation from those linguistically related, have by linguistic changes formed new stocks.

If this surmise be correct they are probably more ancient occupants of this section than the larger tribes are of the area immediately east of them, as for instance the Shoshoni group. It is even possible, and we might say probable, that some of them were here when tribes further south passed by as they moved onward in that direction. Many precedents for this supposition can be cited from the history of the Old World. Are there any data which give support to this supposition?

In answer to the inquiry in the preceding sentence it may be said that there is at least one fact indicative of an affirmative reply. It is known that the vigesimal system of numeration formerly prevailed, and to some extent still prevails, among the Eskimo, Tlinkit, and several other northwestern tribes, and that the same numeral system was

in use among nearly all the tribes of central and southern Mexico and Central America. The same system was also found among some of the tribes of northeastern Asia, as the Tchukchi and the Ainu. Although the decimal system has prevailed generally—at least in historic times—among the coast tribes of California and southern Oregon, there is evidence that the vigesimal system was in use among them to some extent in the past, and was still in use here and there until a very recent date, as vocabularies of the languages of that section show. On the other hand, no one of the numerous Shoshoni tribes, so far as shown by their vocabularies, or as has been ascertained, made use of any other than the decimal system, though it is not improbable that these tribes formerly used the vigesimal system, as the only vocabularies of their languages are those taken after long contact with the whites. The use of stone vessels instead of pottery, which was so common in the neighboring Pueblo section, seems to have been a survival of an ancient custom. Payne, after studying this question, expresses his conclusion thus: "Most of the peoples of the Pacific coast [from Alaska to California], if we may judge from the ethnographic map, have been seated during many centuries in the districts now occupied by them; the ocean and the products of a comparatively narrow littoral belt have sufficed to support them."—(ii, p. 390.)

The complete linguistic segregation into so many distinct groups in this area is apparently a proof of long residence in it. The Athapascan colonies, although some of them are known to be comparatively recent offshoots from the parent stem, have already formed quite distinct dialects, and would no doubt have ultimately become separate stocks had conditions remained as they were before the coming of the whites. It is far more likely that the formation of the linguistic stocks, at least in most cases, took place in this section than that they came hither already distinct family groups. The general similarity of customs which prevails became fixed through the influence of environment, the

character of the food supply and the necessary uniformity in the means of obtaining it.

Any attempt to fix the length of time, in years, that the oldest settlers of these tribes have lived in this section will be theoretical only. However, as they probably sought the coast because of the greater ease of securing a food supply, this, if correct, would indicate that they had not remained in the interior a sufficient length of time to become thoroughly fixed in the hunting habit. At any rate, it is safe to conclude, judging by their unwarlike and indolent character, that the greater ease in procuring a food supply from the water than from the forest and plains was the chief cause of the migration.

The types, however, of the artefacts of this region, which have come down from prehistoric times, show that the Indians were in the neolithic age, but more advanced at the earliest date represented than at the first contact with the whites. Though the cause of deterioration is unknown, it is probably due in part to the incoming of the Shoshonean element. This must have been at a comparatively recent prehistoric date if we may judge from the character and contents of the graves described.

We have in this brief survey omitted, as unnecessary, additional reference to those discoveries which have been brought forward as evidence of preglacial man by the advocates of that theory; however, nothing has been found in this region or that further north to indicate a former decidedly lower grade of culture. The aborigines of this northwest section, so far as the data show, made but little advance in culture—except in two or three tribes along certain special lines—previous to the coming of the whites. Nevertheless, that the Indians of California and southern Oregon were in a lower culture status at the coming of the whites than that of the Haidas, Kwakiutl, and one or two other tribes of the north, must be admitted. This is attributable in part to the more abundant food supply in the northern section, in which are the most productive

salmon fisheries on the continent. Their great canoes, their carving, and their painted symbolic figures, indicate, as has been well suggested, the result of leisure through an abundant food supply. While the northern tribes are rich in folklore tales, which have been gathered and fixed in literature by Boas and other linguistic students, this class of traditions was but scantily represented among the coast tribes of California and southern Oregon.

However, one of the chief questions which arise in this discussion remains unanswered. What relation do the Indians of the northern sections mentioned bear to the Muyscas of Bolivia, the Peruvians, the Araucanians of Chili, the Caribs of Venezuela, and the tribes of Brazil and Argentina? It is difficult to bring ourselves to the belief that the northwestern tribes alluded to were in their known habitats when the ancestors of the South American tribes took their departure for that distant southern region, which must be assumed if South America was peopled from the same point of entrance as North America. If not, when did they reach their historic seats, and from what point did they come? Are they more recent emigrations from Asia, or, to change the question, did the ancestors of the South American tribes come by way of this extreme northern section? We have already stated that the idea that the entire continent was peopled by way of one point of entry involves some most difficult, and as yet, insolvable problems. It is easy to drive over the difficult points with a few generalizations and pass on, but when an attempt is made to point out the steps, the way is filled with stumbling blocks. We leave the question therefore for future solution, if that will ever be possible, and will refer to it again only when discussing the pre-Columbian times of Central America.

It may, however, be said that there was no relation, ethnically or otherwise, so far as ascertained, of the California tribes with the Pueblo Indians, omitting the Shoshonean element. The two groups were distinct in almost every possible respect.

Continuing our examination of the Pacific slope, following in the line of the supposed movement southward, studying, as we proceed, the indications of the grade of culture in prehistoric times, we are brought at the next step to a vast area which presents practically an archæological blank. This is the mountain region extending from California and Oregon to Wyoming and Colorado, and from the international boundary line at the north to New Mexico and Arizona. It is the country chiefly of the Shoshonean group whose borders have in the past reached the Pacific coast in southern California on the west, and the Louisiana line on the east. The remains from prehistoric times are entirely too few to give any indication of the condition or customs of the natives of this region in the past, unless we are justified in drawing the inference from this absence of remains that they were not sufficiently advanced in culture to produce anything of a sufficiently permanent nature that would remain to tell us of the past.

G. A. Dorsey (vol. ii, No. 4, *Archæological Series*, Field Columbian Museum) describes "An Aboriginal Quartzite Quarry," that he found and investigated in eastern Wyoming. He discovered stone hammers, flakes and rejects, but no perfect implements. The final work, he concludes, was done at their village near by which is indicated by numerous "stone tipi circles," that is to say, stones which mark the outlines of the tipis; evidence having been observed in South Dakota that stones were used to hold the tent covering in place. Wilson in his paper on *Arrow points, spear-heads and knives of Prehistoric Times* (in Rep. U. S. Museum for 1897), in which reference is made to stone implements from all points in the United States where they have been found, mentions only the following from the vast area under consideration. A specimen of "flakes of antler or bone in handle of wood" from Nevada; a fine example of triangular arrow-point from Utah; and a well-chipped knife of agatized wood from Wyoming. Yet the number of individual specimens from California, figured and

mentioned, is, if the caches are omitted, twice that of any other State.

It is quite probable that, if the section had been more carefully explored, the finds would have been more numerous, as a few mounds have been found in Utah, and several petroglyphs have been noted in the southern part of the district. Nevertheless, it is certain that the region is comparatively barren of antiquities. This fact agrees with the character of the natives found inhabiting the district at the first advent of the whites, as they include the lowest types of North America. They erected no buildings of stone or other undecaying material, the Hopi or Moqui of the Pueblo region being the only members of the entire family that lived a settled village life and built stone dwellings; moreover, it is now known that the Shoshonean element is largely mixed with elements from other stocks.

Notwithstanding the dearth of archæological remains in their historic seats, the Shoshoni group presents some interesting data bearing upon the prehistoric age in the west. The points where they have pushed their way furthest between other tribes were in southern California, where Cabrillo found them in 1542, bordering for a short distance on the Pacific coast, and northern Oregon on the west, indicating a southwestern and western movement; and at the southeast into Texas. The latter was, however, an offshoot—the Comanche—and was not the result of a general movement of the group. The country they inhabited, though a very extensive one, was comparatively barren, capable of sustaining but a sparse population without cultivating the soil, and this possibly was limited under Indian methods to such small detached areas as were the best natural food-producing sections.

This physical condition tended to isolation and brought about the formation of numerous small tribes, grouped into substocks, or a kind of loose confederacies, probably determined originally by the general similarity of physical conditions over larger areas. Most of these groups, however, in

the search for food, have lost to a great extent any evidence of coherence.

It is very probable, in fact well-nigh demonstrable, that the group entered this intermontane region from the northeast, as the Crow Indians, whose earliest known historic habitat was on the headwaters of Missouri River, had what seems to be a well-founded tradition that their country was formerly occupied by the Shoshoni tribes who were forced westward over the range by the Crows, the Blackfeet and the Atsinas. Morgan, although believing in a general dispersion from the mouth of Columbia River, accepts the Crow tradition as probably true. (*N. Amer. Review*, January, 1870, 56.) The Shoshoni proper were found by Lewis and Clark located, at the time of their expedition, chiefly along Salmon River, Idaho.

Morgan is, therefore, probably correct in concluding that the spread of this group took place in comparatively recent prehistoric times. However, it must have been far enough back in the past to have enabled the vanguard to reach the Pacific in southern California by 1542, where Cabrillo met with them in that year. Although they spoke to this navigator of *oep*, their name for maize, it appears that they did not cultivate it, their chief food being fish, which, it is said, they ate raw; they also ate certain "agaves," probably a species of yucca.

The Indians of the Shoshoni group interest philologists because of their now generally conceded linguistic relation to the Nahuatlan stock, which includes the Aztec language and related dialects. This relation, which opens a floodgate of problems and suppresses some old theories, was first pointed out by Buschmann, but was somewhat slow in obtaining general acceptance, Major Powell deciding that it would be best, in arranging the classification given in his *Seventh Annual Report of the Bureau of Ethnology*, to leave the Piman and Shoshonean stocks distinct for the present. Nevertheless, the union of these groups with the Nahuatlan family has been accepted by the more recent authorities,

with few exceptions. If this classification be correct, and we are certainly justified in accepting it as such, it leads necessarily to the conclusion that the Shoshoni and Aztec groups were derived from the same ancestral stem, or that their ancestors were at some time in the distant past in intimate relations; hence, in substantially the same habitats. As there is nothing known to indicate that the Shoshoni migrated from the south, it follows that the Aztecs or their ancestors lived at some former period in the north. This agrees with the Mexican traditions and the general conclusion of recent as well as earlier authorities.

The general result of the investigation of the past of the people of this section, taken as a whole, without attempting to particularize as to the minor districts, is that they made no appreciable advance in culture during their residence in the section; that if there was any change in this respect, it was a retrogression rather than an advance. If Bancroft's statement is justified by the facts, those natives considered the lowest class of the region—chiefly Paiutes, the so-called Digger Indians—could not have been in a lower stage of culture in the prehistoric era. And yet they were related to one among the most advanced native tribes of the continent.

## CHAPTER VI

### *A STEP TOWARD ADVANCED CULTURE—THE PUEBLO TRIBES*

It should be borne in mind that one object in view in the plan of treatment of the prehistoric era of North America adopted here is, while noting the culture and presenting the archæological features of this northern continent, to follow as far as possible, from the indications of the meagre data, the spread of population over it. As this relates to a very remote date in the past the theories in regard thereto must be based on a few fixed landmarks. If it be possible to trace, even in a general way, this process of peopling the various sections, it will afford a means of comparison with the data found along other lines. Archæology assists in confirming the conclusions reached, or helps to check any tendency to wander too far from the proper course. Language and folklore also form parallel lines which assist in making comparisons. We, therefore, continue the plan adopted, proceeding in our investigation from district to district in what seems to have been the direction of the general movement of population and of the lines of development in the past.

Although the monuments and relics, or in other words the archæological data, must be our chief guide in studying the customs, arts, and industrial activities of prehistoric peoples, language must form the chief basis here, as has been found true in the Old World, of the conclusions reached in regard to the more remote periods, when the identification of race or stock is the object in view. The

character and types of the monuments and artefacts and to a large extent the customs and superstitions are the result of physical environment; hence, in attempts to trace the origin and relationship of tribes and peoples, and to follow the movements of population and the settlement of districts in prehistoric times, language must be our chief reliance. But language and monuments, so far as the latter are to be found, should tell the same story.

Our attempt to follow the progress of population and the development of culture on the Pacific slope has, up to the point reached, resulted in little more than finding that the general trend of migratory movements on that side of the continent has been southward, with tribal movements southwest toward the coast; that there has been change in the lines, but no distinct advance in culture, and that customs have been largely influenced by physical conditions. In fact, the first step brought us to a somewhat lower rather than to a higher grade of culture. We have also found, though the general trend of migration has been southward, that intrusive elements appear to have intervened in California and Oregon, and that connection with the north coast groups has been lost, so far as indicated by the archæological and other available data. In other words, the coast tribes north of the Columbia do not appear to have sent out the colonies which peopled southern Oregon, California, or the interior regions lying back of them, nor are there any indications of a reverse movement. The people of the southern sections were almost wholely different in customs, culture, and arts from those of the northern coast; a people who left but few monuments to tell us of their existence in prehistoric times. Although we leave numerous problems unsolved, perhaps, by following what appears to be the general direction of movements, the key to some of them may be found in the more southern sections. We pass therefore to the pueblo region of New Mexico, Arizona, and the adjoining portions of Mexico where the physical conditions, except the more southern climate and increased aridity,

differ but slightly from those of the area occupied by the Shoshonean stock considered in the preceding chapter.

The physical conditions, though similar in many respects to the region immediately north, were nevertheless such as to impress themselves on the people who made their home here. The region is in a large measure traversed by numerous detached and intersecting ranges, between which lie arid regions, half-desert areas with low, scanty vegetation, and occasionally fertile valleys with a limited and too often insufficient water supply. Isolated peaks and broad, level mesas arise from the plains. The elevated plateaus are gashed by innumerable cañons, usually dry except for a short time during the limited rainy season. Notwithstanding this barren condition, almost every spot of soil if well watered is quite productive.

Many of the valleys or cañons now dry and parched, with little vegetation save the sage brush, and entirely devoid of inhabitants, were occupied in prehistoric times by a settled people, who built their communal houses or little villages against the base of the lofty cliffs which formed the sides of a cañon; or high upon the sides in the cavities and shelves; or excavated cell-like abodes in the face of the precipices. But often the level top of a mesa, or the open situation, or a fertile valley, where the danger from attack was not great, was selected as the site of a village.

In some respects the sedentary people of this section are the most interesting of any natives of North America. Having maintained to the present day, or at least until a few years past, their ancient customs and mode of life, occupying the same type of dwellings and same localities they occupied before the coming of the white man, they have afforded antiquarians and students of ethnology the best available means of studying prehistoric life on the continent. The types of villages or pueblos inhabited when the whites first visited this section, and to some extent yet occupied, furnish the key to the most interesting feature of this southwestern region,—numerous ruins of these types

are yet scattered over a large portion of New Mexico, Arizona, southwestern Colorado, and southern Utah.

Their dwellings on the open level places were chiefly communal houses, often of sufficient size to contain the entire population of a village numbering in some instances as many as two thousand persons, and of the composite form heretofore mentioned (Chapter II). Some of these structures were four hundred feet in length and one hundred and fifty in width. In some instances, the terraces arose from two sides, the highest forming the centre line. As there was generally no inner communication between the stories, the only means of mounting to them was by ladders, which the occupants placed at convenient distances along the rows of terraces, and which were light and could be drawn up whenever it was desirable to prevent unwelcome intrusion. To enter the rooms on the ground floor from the open court, it was necessary to mount a ladder to the first terrace, or first roof, then descend through a trapdoor in the roof by means of an inside ladder, as stairs were not in use in the prehistoric pueblos, ladders supplying their places.

Some idea of the dwelling room in these pueblos may be gained from the number of rooms they contained. Of those in the valley of the Rio Chaco, the Pueblo Hungo Pavie contained seventy-three rooms in the first story, fifty-three in the second, and twenty-nine in the third. These, however, were much larger than the usual size, averaging eighteen by thirteen feet. In the same valley, the Pueblo Bonito, four stories high, contained no fewer than six hundred and forty rooms; and the Pueblo Chottro Kettle, five hundred and six rooms.

The walls of these structures were sometimes built of adobe, but usually, especially in the older structures, of small flat stones and mud or clay. In some cases the mortar appears to have been mixed with wood ashes. The roofs or ceilings, which were nearly flat, were formed of transverse beams, or round poles, with a slightly outward slope, the ends resting on the side walls of the rooms. On these, to make

the floor of the roof and of the terrace above, was placed a layer of brushwood, then a layer of bark, or thin slabs, and over all a thick layer of clay or stiff mud sufficient to render them watertight against the very limited rainfall of that section. The partitions between the box-shaped rooms were partly of wood or entirely of stones and mortar or clay. In some instances, the villages consisted of two or more large terraced structures, capable of accommodating one or two thousand people, and were built contiguous to one another, or, as at Taos, on opposite banks of a little stream.

A peculiar feature connected with the structures of the people, and having relation to their rites and ceremonies, was an excavated, cellarlike, usually circular, room, sometimes mentioned as a "sweat house," but generally designated by the Spanish name *estufa* or the Indian name *kiva*. Every village or pueblo had one or more of these semi-subterranean rooms, the number in some cases reaching a dozen or even more. They were sacred chambers, in which the religious and civil affairs of the tribe, band, or gens (usually gens or society), were transacted, and which also formed a resort for the males. Bancroft epitomizes the use of this chamber rather broadly by saying that it was "at once bath-house, town-house, council-chamber, club-room, and church." Around the sides were benches, and in the centre of the floor a stone or box for fire, wherein aromatic plants were kept constantly burning so long as the regular custom continued undisturbed. Ingress was through a hole in the roof, directly over the fireplace, which opening served as an exit for the smoke as well as for a place of entrance. These underground rooms appear to have been an essential feature of the social life of the people. Cosmos Mindeleff, who devoted considerable time to the study of pueblo architecture, concluded that the estufa was a survival of an ancient custom, not developed in this area.

The origin of this type of communal dwellings is probably an insoluble problem, except that they were built for defence and were probably outgrowths of simpler forms.

There are indications that they were not in all cases built at one time, but in some cases grew by gradual accretions. There were also more irregular and less systematic types, as the ruins at Aztec Springs so frequently mentioned in literature, and the still ruder forms seen in some of the Moqui (Hopi) villages, which seem to have grown by the addition of room to room. Bandelier (*Final Report*, Part II, 31, 1892), speaking of Taos, which he identifies as the "Brabra" of Coronado's chronicler Castañeda, says: "Although the present buildings of Taos are not those of the Brabra of the sixteenth century, they still preserve the appearance of the old village, and their position relative to the river and the valley is the same," thus indicating the tendency to change as needs required. However, in such examples as Pueblo Bonito and the elliptical Peñasca Blanca, the plan and extent in outline must have been determined before the work of building began. It is apparent from the terraced pueblos that one leading object in view in adopting this type was defence, especially protection from the sudden attacks of enemies. In other words, they were to the Indians of this southwest region what castles were to the English and continental barons and counts of the Middle Ages. However, before entering upon a further discussion of these structures, attention will be called to other types of abodes found in this southwestern section.

One class of ancient abodes, known as "cliff houses," has attracted much attention on the part of ethnologists and tourists on account of the peculiar situations in which they are found. Although the term applies, strictly speaking, to the houses built in the shelves and recesses of the cliffs, yet those dwellings of similar character built at the base of the open cliffs, usually on the top of the talus, are generally included in the same class. Cliff houses occur at points throughout the Colorado basin, at the Mesa Verde, along the banks of Rio San Juan, and as far west as southeastern Utah, and they occur as far south in Mexico as the region of the Casas Grandes.

These strange abodes, which were in reality places of easy defence, or, in other words, fortresses, were usually constructed of rough-hewn blocks of sandstone, in shallow recesses and on narrow ledges, often high up on the sides of almost perpendicular cliffs, and in seemingly inaccessible situations save by a narrow line of steps cut in the face of the rock. The recesses selected were those in which the overhanging rock extended somewhat beyond the opening, thus securing the inmates from missiles hurled from above. The remains in some of these ruins, such as wooden articles, textile fabrics, bone implements, and other articles found in the débris which fills the rooms, though possibly several centuries old, are, because of the dry situation, well preserved. In some localities, as at points in the cañon of the Rio Mancos, where the cliff is high, there are as many as two or three tiers of these abodes. In one instance where there are two, the upper is at least seven hundred feet above the river, the lower five hundred feet of the height being the sloping débris; the remainder of the cliff thence upward, in which they are placed, is of massive sandstone, full of wind-worn niches, crevices, and caves. At the distance of one hundred feet from the top, and two hundred feet above the top of the débris, set in a deep niche, with a heavy projecting roof, was the upper of these two houses, its front wall built along the very brink of the sheer precipice. Thirty feet below, in another similar but larger niche, was the other and larger house, with a long line of apertures.

This lower house included the entire floor of a niche sixty feet long and extending back into the cliff fifteen feet at the widest point. The front wall was flush with the precipice, and the division walls extended inward to the rock at the back. Portions of the walls have fallen away, but the main building, still some twelve or fourteen feet high, shows the window-like openings through which the inhabitants could look forth upon the valley below, to detect the lurking foe. Even in this cramped position, where, as it would seem, every foot of space was needed for dwelling and

storage purposes, room was nevertheless made for the estufa; this could not be omitted, whatever trouble and inconvenience it might cause the inhabitants.

The following description of some cliff dwellings in Navaho Cañon, a tributary of Mancos Cañon, given by an amateur explorer, is of interest to the general reader, as it seems to bring us face to face with what is described.

Perhaps the best preserved remains of a cliff-dwelling eyrie—at least one that retains more features of interest than many of the other ruins—is one that is situated in a right-hand branch of the second large right-hand fork of Navajo Cañon. It is about three hundred feet long. Under a natural sheltering rock, remains are standing of three stories. Originally the building was probably five stories high, and was built in the form of a terrace, the two lower tiers having been built outside the limits of the arch, and lower than the platform of the cave, so that what we now see standing are the three upper stories. The lower parts of the edifice, more exposed to the weathering, have mostly crumbled away. The entrance to the apartments in the cave was probably made by passing over the top of the outside buildings.

In one portion of the ruin, at the base of the doors to the upper rooms, are many timbers which project out from the wall. Though the floor of the scaffolding has all fallen away, this would seem to show that there was once a balcony here.

The masonry of the building is all of very good order; the stones were laid in mortar, and the plastering carefully put on, though, as the centuries have elapsed, it has peeled off in certain spots. At the north end of the ruin is a specimen of masonry not to be seen in any other cliff-house yet discovered. This is a plastered stone pier which supports the walls of an upper loft. It is ten inches square, and about four feet high. Resting on it are spruce timbers which run from an outer wall across the pier to the back of the cave. Above the pier is a good specimen of a T-shaped door, with lintel of wood and sill of stone.

One lintel was made with eleven small sticks about three-quarters of an inch in diameter, which were very smoothly plastered over. The floors were also made in the same manner, by placing twigs and mud over the sills. Lying among the débris are masses of plaster which show the grooves made by the sticks and twigs, and many fragments of mortar still hold the sticks imbedded in them. Sills and beams were neatly smoothed on the upper surface.—(Chapin, *Land of the Cliff-Dwellers*, 147–149, 1892.)

Throughout the entire length of Mancos Cañon, and in all its branches, fortress-like structures of the type mentioned

occur, the number being large; one party of explorers having visited as many as one hundred and six in Navaho Cañon alone, which is one branch of the Mancos. Most of the ruins in this cañon are of large size, some of them, according to the author last quoted, containing from thirty to one hundred rooms. The result of an excavation in one of these houses by the Wetherill brothers is thus described by this author:

> Notwithstanding the difficulties and disagreeable nature of the work —for the alkali dust is choking—they [the Wetherills] followed up the digging and were successful; they discovered one hundred sandals,—some in good condition, others old and worn out,—a string of beads, a pitcher full of squash seeds, and a jug with yucca strings passing through the handles. This jug was filled with corn well-shelled, with the exception of two ears. They unearthed a perfect skeleton, with even some of the toe-nails remaining; it had been buried with care in a grave two and one-half feet wide, six feet long, and twenty inches deep. A stone wall was upon one side, and the bottom of the grave was finished with smooth clay. The body lay with the head to the south, and face to the west. It was wrapped in feather cloth, and then laid in matting. Buried with it was a broken jar, a very small unburned cup, a piece of string made from hair, and one wooden needle.
>
> Next the wall mentioned above was found the body of an infant, which was dried and well preserved like a mummy. It was wrapped in thin cloth, over that was feather cloth, and encasing all was willow matting tied securely with yucca strings.
>
> They found also a piece of rope five-eighths of an inch in diameter, with forty-eight strands; bone needles, awls, stone axes with and without handles, twine, arrow points, a bow-string, a large jar, coiled ware, and four skulls.—(Chapin, *op. cit.*, 159–161.)

The articles found in this ruin seem to indicate that its occupancy was continued into post-Columbian times.

Another type of abodes is that known as the cavate dwelling. They are rooms artificially excavated in the face of cliffs, and so far as discovered, occur chiefly on the west side of the Rio Grande, between Santa Clara and Cochiti, a distance of some seventy or eighty miles, and in the San Juan valley, especially above the mouth of the Rio Mancos. The rock here is chiefly a yellow volcanic tufa of coarse

texture, sufficiently soft and yielding to be readily carved or worked out with the stone implements of the ancient inhabitants. It is in the face of the cliffs, which rise perpendicularly from fifty to two hundred feet above the débris, that the former inhabitants hollowed out their dwelling places of this type.

The process of forming these abodes is supposed to have been about as follows:

The doors, which are usually somewhat square, were first cut into the face of the cliff to the depth of about a foot, then the work of hollowing out the room began. This is generally oval or irregularly rounded, about twelve feet in diameter, and only of sufficient depth at the lowest point to permit a full-grown person to stand upright. The inside was excavated by scraping grooves several inches deep at intervals of several inches and breaking out the intermediate portion. In this way the work progressed until the room reached the desired size.

These hermit abodes were not without some of the conveniences of usual dwellings, as along the inner walls, niches and recesses were formed as places for storing household and other articles. There were also small holes in the sides close to the roof, in some of which the decayed ends of beams were still remaining. These probably held poles on which, as in the pueblos, it was the custom to hang blankets and clothing as well as meat to dry. Small openings were made in the outer wall to serve as windows. Although the blackened roof and wall show the use of fire, this was probably used within only in times of great danger.

In addition to the evidences of culture found in the architectural remains of this district, there is in the innumerable sherds and hundreds of whole vessels of clay found in the different types of ruins positive proof that the inhabitants were preëminently pottery makers from the very earliest date. The oldest varieties are those known as the coiled, or corrugated, and the white ware, the former so-called from the fact that the ollas, bowls, etc., were

built up by the maker with ropelike strips of clay, coiled round and round until the vessel was complete, finger pressure in the operation forming the corrugations. Those found in the San Juan district, which were more uniform and apparently more archaic than those of any other section, belonged exclusively to the two types mentioned. Chapin says in his work heretofore quoted that "From a study of some of the relics of pottery found, it appears that the cliff dwellers imitated certain features of their architecture in the products of the kiln."

The articles found in the cliff houses show a not easily explained association of ancient and comparatively recent articles. Of these we note as the most interesting, the sandals made from fibres, woven, for the most part, in a simple manner by crossing the strips. They were fastened to the feet by strands of the same material. Numerous specimens of basketry have been found in cliff dwellings in southern Utah. Several pipes were found, many stone axes, and a few bows and arrows. There is evidence also that the people who occupied these abodes used hampers in which to carry burdens, and straps to put through the handles of their ollas or water jars, a custom brought down to historic times.

It is evident from the preceding statements in regard to the architectural and other remains that the people of the Pueblo district at the earliest date to which they can be traced were advanced to a higher culture stage, in some respects, and as judged by Morgan's culture scale, than any of the more northern tribes we have previously noticed; though the Haidas were their equals in their wooden structures and carvings, and their superiors in the graphic art. The type of culture in the Pueblo region was, as is apparent from the examples noticed, quite different from any previously mentioned, but much of this difference is clearly attributable to the difference in the physical conditions. An arid, timberless country will not give birth to types of wooden structures; resort under such conditions must

be made to stone and earth, and this, as might be judged *a priori*, was the course followed by the people who entered this region to make it their home. But why the particular forms of structure noticed were adopted is not so easily accounted for. However, that defence was one of the chief objects in view is evident; and that the selection of the crevices and niches in the bluffs was largely determined by necessity in the search for places of refuge is also evident. It is apparent from the character of the structures throughout the district, as shown by the ruins and the remaining inhabited pueblos, that the people were in a chronic state of warfare, or in constant danger of attack by superior foes.

The problems of especial interest in studying the past of the region under consideration are those relating to the origin of the cliff dwellings and cave houses, and the causes which brought about the dispeopling of these resorts and of the hundreds of clustered villages whose ruins are scattered over the San Juan and Colorado basins and other parts of the southwest. There is also the important question of the antiquity of these different types, and the questions relating to the origin and descent of the different stocks and tribes of sedentary Indians found inhabiting this section when they first became known to Europeans. Some of these questions will in all probability never receive satisfactory replies, although the investigations of the region and the study of the people made in recent years by Cushing, Bandelier, Nordenskiold, Fewkes, Hodge, Mindeleff, and others have served to dispel much of the mystery which had hitherto surrounded them.

It may be stated that one result of these investigations has been a tendency to cut down former estimates of the antiquity of the ruins, and to do away with the notion that a former much greater population has been reduced by the increasing aridity of the section. J. W. Fewkes, one of the investigators mentioned above, after describing one type of structure which has not yet been noticed gives in the

*Journal of Ethnology and Archæology* his idea of the various types of dwellings of this region. We quote his description and comment as follows:

We have, in the preceding pages, mentioned examples of round ruins which reach a large size. In all of them, however, an inclosed space open to the sky within the surrounding wall is present. These ruins may be called pueblos, or composite houses, and are each large enough to accommodate a considerable population. There are also instances of small round ruins, which, from their size may rather be called towers, and which, although several stories high, have but a single room in each story. Moreover, there is evidence that these towers were covered with a roof, which gave them at least the appearance of a house.

Such towers have been frequently described from northern parts of Arizona, New Mexico, Utah, and Colorado, but their existence in the region about Zuñi is not as well known to archæologists. It was, therefore, with considerable interest that I visited a single example of this type of ruins, not far from the trail leading from Gallup to Zuñi, in a lonely cañon a few miles from Pintos Ranch. . . .

The position of this tower is somewhat exceptional. As a general thing similar towers, as those in Mancos Cañon, are placed on elevated ground as if to serve as lookouts, and although not all these ruins have such an elevated position, this is ordinarily where they are found.

The tower lies at the bottom of the valley, or on one side of the bed of the cañon in which it is situated, its site being slightly elevated upon the débris which has fallen from the almost perpendicular walls of the surrounding hills. Notwithstanding this lowly position, however, its situation is such that it commands extensive views up and down the main cañon and into a tributary cañon which opens into it near by. It thus has a good position to command the approaches to both in the only ways of entrance, except over the mountains themselves. While, therefore, it may be an imperfect watch-tower as far as wide extended views are concerned, its position renders it well suited to observe what takes place in the cañons below.

The walls of the tower are in a dilapidated condition, but enough remains to show that it was constructed on substantially the same plan as those in more northern regions. Of the former wall, there still stand above the base, about two-thirds of the periphery; the remainder being clearly marked out by the mounds of fallen stones. The ruin is built of small stones, some of which are smooth, and dressed into regular shapes, while others are rough, with the form they had when taken from the débris at the foot of the hills near by.

Seen from the outside there are evidences that the tower had formerly three stories, each occupied by a single room. The diameter of these

rooms diminishes as one rises from the base, and the limits of these successive chambers are plainly indicated both by the breaks in the external walls, and by cedar beams, the ends of which are still in place in the upright walls.

In the lower story the stones of the walls are uncut, showing that the builders made no attempt to smooth off their angles. These walls, therefore, on the outside, are composed of the roughest kind of masonry. The inner walls of this chamber are smoother, but the room is so full of fallen débris that barely a third of it is above ground, and a determination of its shape is almost impossible.

The line of separation between the external rough wall of the first chamber and the smooth-faced stones of the second is also indicated by the ends of cedar flooring, which are still intact, and project beyond the wall. Inside the tower, the floor is completely destroyed, and nothing remains to mark its former position, except the stumps of cedar posts embedded in the walls.

A large, upright, oval opening, hardly spacious enough to crawl through, but of sufficient capacity to admit abundant light, is found in that part of the wall which is still standing on a level with the first floor.

The walls of the second story which are still upright, are of well-fitted, evidently dressed stone, forming a well-drawn arc of a circle. They are built of smaller stones than those of the lower story, and care seems to have been used in fitting the stones closely together.

The indications of the third story are seen in the ends of the flooring still remaining in the wall, and in the evidence of a smaller diameter, which is brought about by the diminution in the thickness of the wall. Only a small part of the chamber of the third story still remains, the upper part of the wall having almost completely tumbled in while its fragments lie strewn about at the base of the ruin on all sides.

The diameter of the tower at its base was probably from eighteen to twenty feet, while the wall now standing reaches a height of about fifteen feet.

A few fragments of pottery were picked up about the tower, but, relatively, the amount of these evidences of a former occupation is not as great as in some of the other ruins. Probably more would be found by excavating.

Theories as to the former use of this structure must be more or less speculative. If it was once a dwelling place, its capacity was very small, and if a watch-tower its position is far from favorably chosen for a wide outlook. It may have been a sun temple, or estufa, where sacred ceremonials were once celebrated. The Moquis have a legend it is said, that similar towers were built for the snakes used in ceremonials, and for the priests who took charge of them. Its size is small for an estufa, although it is fully as large as some of the so-called

estufas in the cliff dwellings. The size of the tower is greater than that of the single chambers of the cliff dwellings which I have had the good fortune to study, but by no means as great as that of some of those of Mancos Cañon and the Cañon de Chelly. Whatever it was whether estufa, lookout, dwelling place, or fortress, it was probably never used by the ancestors of the Navajo Indians which now live in its immediate vicinity. It belonged, probably to that people, related to the pueblos, which have left so many traces of their existence in the ruins strewn all over the neighboring country. I believe that these people, sometimes living in cave houses, again in circular, composite stone houses, and still again in towers, were the same people, and that they were ancestors of the race of which the Zuñians and Moquis, are the present living types. It was the New Mexican culture which the nomadic Navajos met when they came into the country from the north. The families, which later huddled together in pueblos, at this stage of their development, lived in isolated dwellings, the best which they could devise for protection. One of the most convenient forms to give such dwellings was circular. As the families increased in size, into clans, the round pattern was still adhered to, but the diameter of the house was very much enlarged, until it became a round pueblo, such as those at Ar-che-o-tek-o-pa. In that type the chambers lined the periphery of the pueblo, leaving an inclosed open space within, in which other round dwellings were built. Increase in the number of these round houses, and economy of room in the inclosed area, led to the angular form, still preserving the circular wall surrounding the whole cluster. The last step in the growth of the pueblo was the abandonment of the surrounding wall, by which we get the modern pueblo, with its rectangular walls, in which the circular form has wholly disappeared. Such a ruin as the larger in Ar-che-o-tek-o-pa is an example of an intermediate stage in the transition between a round ruin crowded with small square or rectangular chambers and the ordinary modern rectangular type. In the evolution of the pueblo composite dwelling, we may, by our theory, suppose that the tower, or small single-roomed round house, was the most ancient. The increase in the size of such a tower, in which we have a dwelling, with a central open space, with peripheral chambers, followed, until finally we pass into the rectangular type, upon which the existing pueblos are constructed.

That the inhabitants of the round buildings were the ancestors of the Zuñians seems to be indicated by the style and ornamentation of their pottery, and the architecture of their dwellings, as far as they can be made out.

It is quite probable, in fact it is generally admitted by those who have studied the remains of these sections, that

the ancestors of the natives occupying the still inhabited pueblos were the authors and chief occupants of the cliff houses and cave dwellings.

In attempting to draw deductions in regard to the past of these people, from what has been learned of them in historic times, there are certain facts which must not be overlooked. One of these is the fact ascertained by recent investigations, especially in regard to the languages and dialects spoken, that the people forming these pueblo groups are largely composite, formed of elements from different tribes, and, in some cases, from different stocks. For example, it has been clearly ascertained that the population of the Moqui or Hopi pueblos, though based on an original Shoshonean element from the north, was so modified by addition from the pueblos of the Rio Grande valley and those of southern Arizona as to render it a mixed group no longer assignable to any one stock. The same thing is true to a limited extent of the pueblos of this region, and even of the Navahos who can no longer be counted as purely Athapascan, though their language places them in that stock, and the original element was an offshoot from the main group formerly combined in the north, the present home of the Dené.

The ethnic and political condition of this entire southwestern region is in some respects a puzzle difficult to solve, though the social and religious life, and to some extent the political life of the people have been somewhat thoroughly studied. In any attempt at a solution of the puzzling features, the first step, after ascertaining the linguistic relations, and the similarities and differences in customs, is to reach some conclusion in regard to the age of the settlements and the antiquity of the ruins. On this conclusion must be based, to some extent, our theory as to the necessity which caused the people to construct abodes adapted to defence.

It may be stated as now generally conceded that there is little, if any, archæological evidence of great antiquity, the

ruins of the section being, according to all recent investigators, those of structures built by the ancestors of the historic Pueblo tribes. It is thought by some who have studied the ethnology and history of the section that there are indications of an intrusive or passing disturbing element which preceded the advent of the Athapascan and Shoshoni (Ute) elements, yet all agree in attributing the ruined pueblos and cliff dwellings to the ancestors of the Pueblo tribes.

Bandelier became convinced from the traditions of the Indians that the number of ruins did not necessarily indicate what would seem to be a correspondingly numerous population at any given time, as there was evidence of frequent shiftings of the tribes from point to point. The Zuñi people had, according to their traditions, changed places many times before settling in their historic pueblo. The Indians of Cochiti had occupied, previous to the coming of the Spaniards, some seven different known sites; those of San Juan could mention three shiftings previous to the sixteenth century, and their traditions point to numerous ruins on both sides of the valley as having formerly been villages of the Tehuas. It has been supposed that the cliff houses were the earliest residences of the people who entered this region, but this view does not appear to be well founded as there is much evidence that some, at least, were occupied contemporaneously with the pueblos, some in fact subsequent to the coming of the Spaniards. For example, the Indians of Santa Clara assured Bandelier that the ruined pueblo "on the summit of Pu-yé, and the cave-dwellings in that cliff and at Shu-finné were the work and abodes of their ancestors." There is evidence that pueblos have, in some instances, been rebuilt as many as two or three times on the same site, but there is nothing to indicate that even the first reached back to a very distant age.

There are two classes of pottery, known, as before stated, as the coiled and the white, which are considered prehistoric from the fact that specimens occur in the oldest ruins, and

that none of these types have, so far as known, been made in historic times.

One item of evidence to start with in the attempt to approximate the time of occupancy of this region by the Pueblo tribes we have in the fact that there were many abandoned and ruined pueblos and cliff houses at the arrival of the Spaniards in 1540. This will unquestionably carry back their history in this region to the commencement of the fifteenth century. The formation of their customs and their adaptation to the physical conditions in which they were placed must also have required time. They had already, while the prehistoric Moqui pueblo Sikyatki, which was in ruins before the Spaniards appeared, was in existence, acquired fully the ceramic art, and were cultivating corn. The development of these industries required time and could not have been brought with them from the north, but were most likely acquired through added elements from the south.

Whether or not the different languages were developed in this section, it is impossible to say, as there is nothing on which to base even a theory except the fact that there is no relation between the Tanoan, Keresan, and Zuñian linguistic stocks nor with any other groups.

Whether the development of the architectural types was wholly through the Pueblo tribes may be questioned. That here, in going from the north southward, begin new types in this and other respects, which are related to the types hence southward, as shown by Bandelier and maintained by Fewkes (*Am. Anthrop.*, May, 1896), must be admitted regardless of the explanation that may be given.

That the development of the architectural types is due in part to physical conditions and in part to pressure by hostile tribes is clearly demonstrable. The materials used in construction are such as the arid and treeless section affords, and the types in regard to form are those of defence and security against enemies using the only weapons and means of attack formerly available to the natives of that country. Whether

the single houses of which the explorers speak preceded these defensive types is yet an undecided question. Dr. Fewkes, speaking of the ruins on the Zuñi reservation, says: "We might suppose that in addition to the ruins, the isolated houses, which one sometimes finds in the neighborhood of the ruins, were ancient permanent dwelling-places. If such a supposition is correct, it may point to a belief that originally the sedentary Zuñians, now crowded in one pueblo, lived in families more or less isolated, and only later were united in clusters, when driven to that expedient by force of circumstances."—(*op. cit.*, 97.) And Bandelier says: "The small house is probably the germ from which the larger structures were evolved."—(*Final Report*, Part II, 578, 1892.) He also, in the same paragraph, emphasizes the fact that although the communal houses at Casas Grandes and on Gila River differ in some respects from those further north, "they still show the same leading characteristics of being intended for abodes and at the same time for defence."

The same author calls attention to certain traditions of the southwestern tribes which have some bearing on the question of their origin and antiquity.

> Of greater importance are dim traditions preserved by Southwestern tribes which point to their origin in a certain direction, and to shiftings of the tribes in ancient times. While the Pueblos declare that they came to the surface of this earth in Southern Colorado, and the Navajos claim that they first lived in a region not very remote from that pointed to by Pueblo mythology, they also speak of wanderings of tribes, of which they possess only a vague recollection, in the direction of the south. The belief seems to be general among them that the drift of the shiftings has been from more northerly regions to southerly climes. What importance must be placed upon this can only be determined by future investigations of folklore. Ribas (1640) asserts that all the tribes of Sonora and Sinaloa [Mexico] agreed in affirming that their ancestors originally issued from the north. The same is reported from Chihuahua by Villagran and by Mota-Padilla.—(Bandelier, *Final Report of Investigations among the Indians of S. W. United States*, Part II, 588, 1892.)

It seems apparent from the evidence that the sedentary tribes of the southwest have been compelled to fortify themselves against persistent foes for the greater portion of the

time that they have inhabited the district, whether they entered as tribes from another quarter, or formed the groups in the district.

Who were the enemies that forced the Pueblo people to take such precautionary measures? It is well known that during the Spanish régime the chief enemies both of the Spaniards and the Pueblo Indians were the Apaches, Navahos, and Utes. Were they the enemies who in prehistoric times had forced the sedentary natives into the crevices of the bluffs, and caused them to build communal strongholds? This brings up the question of the advent of these tribes into this region, a question which has as yet received no entirely satisfactory solution.

Lowery (*Spanish Settlements in the United States*, 68, 1901) says it is purely a matter of speculation how far south members of the Shoshonean group had penetrated into this territory at the advent of the Spaniards—specifying, however, the Moquis as one exception. Nevertheless, there are some items which can be used as pointers in this regard; as, for example, the fact that Cabrillo found Shoshoni bands located on the Pacific shore in southern California in 1542. As it appears to be clearly proved, as stated in the preceding chapter, that the Shoshonean stock had its origin somewhere to the northeast of their historic habitat, it is reasonable to suppose they had reached Arizona before they made their way to the Pacific coast. The settlement of an offshoot at the Moqui pueblos preceded the arrival of Coronado at Cibola; in fact, as shown by Fewkes (*Amer. Anthrop.*, May, 1896), one of their pueblos was already in ruins at the coming of the Spaniards. It is evident, therefore, that at the founding of the Moqui settlement the Utes were within striking distance of the pueblos, though they may not have commenced their raids upon them until later.

It has been questioned whether the Apaches and Navahos were west of the Rio Grande when the Spaniards entered that region; in fact, Hodge holds that the Navahos were not, and thinks it doubtful whether the Apaches were. Although

Dr. Fewkes is inclined to accept this conclusion so far as the Navahos are concerned, it is more than probable that the attacks chiefly of one or both of these tribes caused the Pueblo Indians to adopt the defensive structures. As these defensive types were in use in prehistoric times, the enemies against whom they took these precautionary measures must have been at hand. It has been said that these defensive measures were taken by the people of one pueblo to defend themselves from the attacks of the people of other pueblos. In other words, that the custom was due to intertribal warfare. Although it is true that their traditions speak of occasional warring among the pueblos, it is improbable that this custom of providing so carefully against attack would have been adopted by all the tribes without exception unless there had been a more powerful foe. The most satisfactory explanation is that the warlike Apaches were in the district at an early date, though Coronado may not have encountered them west of the Rio Grande; or that some other strong, warlike tribe which has passed on to some other point was in the district. Captain John G. Bourke and Dr. W. Matthews, both familiar with the tribes and the literature, were of the opinion that the appearance of these Athapascan offshoots in the southwest was long before the advent of the Spaniards. Any other conclusion introduces difficulties not easily overcome, and inconsistencies more formidable than the negative proof of Coronado's silence on the subject.

The account given by G. M. Pepper (*Ancient Basket Makers of Southeastern Utah*), may possibly point to the origin of some of the elements of the Pueblo population. His description of the numerous specimens of basketry found in the cliff houses of Grand Gulch region serves to point to certain tribes of California as the initiators of the particular types of the baskets found in these Utah caves. Pepper finds in a number of specimens that the form, the stitching, and the designs bear a strong resemblance to those of the Pomos and one or two other Californian tribes. The

reader will also remember that stone ollas of the same form as the pottery ollas of Pueblo make have been found in ancient sites in southern California. Possibly these slight resemblances may point to some former relation. However, we consider the origin of the Pueblo stocks an unsolved problem. They remind us in some respects of the few remaining trees standing on the area over which the fierce storm has passed levelling the monarchs of the forest. One thing is certain, that in this district begins a culture which advances step by step as we move southward until it culminates in the semicivilization of southern Mexico and Central America.

## CHAPTER VII

### *THE MIDDLE GROUND—NORTHERN MEXICO IN PREHISTORIC TIMES*

As we have, in the course of our study, entered what has been termed the Cordilleran region, which includes not only the Pueblo and Shoshonean sections, but also Mexico and Central America, we may perhaps profitably turn our attention briefly to certain facts and questions relating generally to this extensive region. That the most advanced native culture of North America is found in this region is known and recognized, and yet it is also well known that a large percentage of it is barren, semi-desolate, and but slightly clothed with forests. It has been claimed that one principal reason why culture has advanced more rapidly on these elevated plateaus than in the level forest regions is that the absence of forests wherein game may multiply and the scant supply of natural food has forced the occupants to adopt agriculture as a means of obtaining a food supply; hence, a sedentary life resulting, leisure for improvement was obtained. But it may be added further that the materials with which abodes were constructed were not of a character to be carried from place to place, or to favor hasty construction, as was the case of those obtained in a forest region.

Payne adds the further thought on this point that just as the Spaniards in their conquests on the American continent avoided the forest sections, so had the advanced aboriginal tribes before them avoided these regions. He says: "With

the exception of the coasts of the Caribbean sea and the Mexican gulf, the vast forest region which comprises the whole of the continent east of the great mountain range was left untouched by the Spaniards of the period of the conquest, as it had been left untouched by the advanced aboriginal tribes who preceded them. The reason was the same in each case: the process of conquest requires a material of a certain kind. It can only be based on the subjugation of settled tribes, who are unable to escape it in consequence of their geographical position; and outside the mountain districts this condition could not apply." He then proceeds to show, by example, that when the settlements of the aborigines in the forest regions were attacked by a superior force, they had only to abandon them, retreat a few leagues into the forest, make fresh clearings, and hastily erect new wooden dwellings.

This line of argument seems to be correct, and we accept it as legitimate, but there are other factors which must be considered in attempting to present a complete explanation. Why did the Utes, who lived near the Pueblo region, feel no such modifying effect of environment as the people of the latter region? With the exception of the difference due to the slightly more northern latitude, the physical conditions were much the same in the two sections. The conditions of southern and central Utah are not widely different from those of Arizona and northern New Mexico, but the typical Paiutes differed widely in culture from the people of the pueblos. It is evident, therefore, that an additional factor must be sought before we can reach a complete explanation. However, having observed in the latter region the inception of new types of art and custom, which appear to point to a higher stage of culture than we have found in the northern Pacific section, we pass, without further discussion of the problem of this difference, to the next step in our study of the prehistoric times in the Pacific division; which is to trace, as far as is possible from the archæological remains and all other available data, the origin

and development of this higher culture, and the impetus, or influence, which pushed it forward.

That the slight advance noticed in the Pueblo region was not due to the superior physical characteristics of the people will become at once apparent by a comparison with the types thence northward. It may without doubt be attributed chiefly to the sedentary habits of the people and to the cultivation of the soil. The character of the dwellings is in a large measure the result of the physical conditions of the region, and their peculiar types are mainly due to the need of defence against enemies; to the character of the soil and stone and the absence of trees were largely due the manufacture and use of pottery, as well as the kinds of material used for building purposes. It has been suggested that where it was necessary to have recourse to stone as the chief building material, its employment would seem to be directly suggested by the primitive practice of occupying mountain caves as dwellings, though it is more likely that it was due to the lack of other materials. Possibly the use of caves in the southwestern section may to some extent have preceded the custom of forming them into dwellings —that is, before the era of the cliff houses, though it has certainly continued parallel therewith. It must be remembered, however, that we have started with the idea that man, if he entered in the postglacial era, was not in the lowest stage of savagery: a conclusion which cannot well be controverted. Moreover, there does not appear to be any evidence that true troglodytes were ever known in any part of North America.

As those who have made a study of the origin and development of ceramics have reached the conclusion that— at least in America—it was preceded by the making of baskets, it is possible that basketry with the Pueblo Indians was to some extent a borrowed art, while pottery making was chiefly a home development. That the development along either line has not been wholly due to physical conditions is evident from the fact that while the Pueblos and

Navahos occupy the same kind of region and to some extent the same region, with plenty of clay and basket materials, the former carried pottery making to a high degree of excellence, while the Navahos produced only a limited amount of inferior ware. However, the ethnic indications, so far as shown in either pottery or basketry is found in the type forms and decorations and not in the material used.

As the development of the culture types of the Pueblo region is not to be found toward the north, nor, as will hereafter be shown, toward the east, our attention must be directed to the more southern regions. The advanced culture of the Mexican and Central American tribes is well known, but it is only by studying its peculiar types and their relation to types of the outlying and adjoining districts that prehistoric development can be traced. In order, therefore, to note the links, if any exist between the culture of the Pueblo region and that of southern Mexico and Central America, we notice briefly some of the archæological remains in northern and central Mexico—the middle ground.

Cliff-dwellings are found as far south as Casas Grandes in Chihuahua. Some quite remarkable ones are said to exist near the Piedras Verdes, some two days' journey from Casas Grandes. Some examined by Bandelier, thirty-five or forty miles southwest of Casas Grandes, were found to be in all their essential features similar to those of the Pueblo district.

The ruins in the basin of the Rio Gila and the valleys of Chihuahua though similar in general character to those of New Mexico and northern Arizona, show this difference: that here in this more southern region adobe is the chief material used, and the principal structure of the village was a building of more compact form, of which the Casa Grande, so often described and figured, may be taken as a type. In the New Mexican architecture the defensive element was combined with that of shelter, in other words the dwelling was made the citadel, but in this southern

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Ruin of a three-story adobe house, known as the Casa Grande, near Florence, Arizona; showing the pisé method of construction.

section reliance for safety in time of danger was upon the central strong house of the village. Perez Ribas, (1604–1640) the early historian of Sonora, and the adjoining sections of northwestern Mexico, says the villages of the Nebomes or southern Pimas, who are kindred of the northern Pimas of the Gila valley, consisted of solid houses made of large adobes, and that each village had a larger and stronger edifice provided with loopholes which served in case of attack as a place of refuge or citadel. This is confirmed by the archæological remains of the Salado and Gila valleys and of Chihuahua.

As these defensive structures and the custom of differentiating the citadel and the dwelling pertained to the prehistoric times of that section, there seems to be in this fact evidence of one forward though slight step in culture.

According to Bartlett, the ruins of Casas Grandes revealed the fact that the communal or composite type of building seen in the Pueblo region was maintained at this point, as he says that from a close examination of what remains of the buildings, he came to the conclusion that the outer portions were not above one story in height, while the central ones were from three to six stories. The walls, which appear to have been built of sun-dried blocks of mud and gravel, vary in thickness from sixteen inches to four feet. It is also true that here, in Salado valley and elsewhere in this section, the rooms were larger, as were also the doors, than in the Pueblo region; nevertheless, here, as in the latter, the cell or box shaped room, though somewhat expanded, was the primary unit of the structure, as shown by the figure which Bartlett gives.

In the cliff houses of the upper Salt River valley, which are very dry and well sheltered, sandals made of yucca fibre and thread, and specimens of cotton cloth have been found. It is evident, therefore, that the ancient inhabitants of the upper Salt River valley, though their dwellings were built in the cavelike openings of the cliffs, had obtained cotton, in all probability cultivated it, as there is evidence from the

signs of irrigation that they cultivated the soil, though hiding from some inveterate foe.

Cushing describes the ruins of Tempe—the delta between the Salado and Gila—thus:

> The foundation of thin-walled, usually somewhat rounded huts, outside of the walls surrounding communal dwellings, scattered indefinitely and apparently without system, particularly around the outer borders of each city was designed for occupancy by a distinctive ultra-mural—one might almost say ultra-urban—population; as shown by the fact that they were not, as are the scattered-form huts of Zuñi-land, occupied in summer merely, but in winter as well; as signified by the occurrence in each of a central hearth or fire-bowl, like those of the regular houses within the city.—(*Preliminary Notes*, 175.)

Bandelier attributes the "rounded huts" to the Pimas. This author also expresses the opinion that the ancient culture which flourished at Casas Grandes and in its neighborhood was similar in general character to that which existed on the banks of Gila and Salado Rivers, and substantially of the same type as that of the Rio Grande valley. The architecture was similar in style, yet he considered that a marked advance was made at Casas Grandes over any other portion of the southwest to this point, which was shown in the foundations of the houses, in their larger rooms and doors, in their interior finish; in certain household utensils, as metates, etc.; and in the method of constructing irrigation ditches. He mentions also low circular mounds, which were composed of gravel and apparently made as foundations for superstructures; in some cases, these were encircled by a rim of stones, and at some points by stone walls. There was also here the remains of an artificial enclosure of about the fourth of an acre, surrounded by an embankment supported on the inner side by a stone wall.

Of the objects found at this point, the pottery has attracted most attention, partly by the large number of specimens found in a good state of preservation; and by the decorations, which consist largely of symbolic figures like those of the pueblos of New Mexico. The forms of the vessels

were also similar to those of the pueblos, except that here the bottoms were usually convex, while in the latter they were flat. The metates of Casas Grandes differ from the northern ones in being better made, and sometimes elaborately carved; examples with legs have also been found, one of which is figured by Bartlett (*Personal Narrative*). The stone axes and other stone implements are similar to those of Arizona. Here also cotton cloth and threads of yucca fibre have been found in the ruins. Bandelier says turquoise beads and ear pendants of turquoise and shell beads, and shells both from the Gulf and Pacific coasts, have been found here. To the foregoing description of the ruins of Casas Grandes and of the artefacts found there, drawn from the writings of Bandelier and Bartlett, chiefly the former, we add the following notice of them by Lumholtz, given in his recent work, *Unknown Mexico.*

Suffice it to say that the Casas Grandes, or Great Houses, are a mass of ruined houses, huddled together on the western bank of the river. Most of the buildings have fallen in and form six or eight large mounds, the highest of which is about twenty feet above the ground. Low mesquite bushes have taken root along the mounds and between the ruins. The remaining walls are sufficiently well preserved to give us an idea of the mode of building employed by the ancients. At the outskirts of the ruined village the houses are lower and have only one story, while in its central part they must have been at one time at least four stories high. They are not palaces, but simply dwellings, and the whole village, which probably once housed 3,000 or 4,000 people, resembles, in its general characteristics the pueblos in the Southwest, and, for that matter, the houses we excavated from the mounds. The only features that distinguish these from either of the other structures are the immense thickness of the walls, which reaches as much as five feet, and the great height of the buildings. The material, too, is different, consisting of enormous bricks made of mud mixed with coarse gravel, and formed in baskets or boxes.

A striking fact is that the houses apparently are not arranged in accordance with any laid out plan or regularity. Nevertheless, they look extremely picturesque, viewed from the east as the sun is setting. I camped for a few days on the top of the highest mound, between the ruined walls.

No circular building, nor any trace of a place of worship, could be found. The Mexicans, some of whom have nestled on the eastern part

of the ruins, have from time to time come upon beautiful jars and bowls, which they sold to relic hunters or used themselves. Such pottery is far superior in quality and decorations to anything now made in Mexico. The ancient metates of Casas Grandes, which are much appreciated by the present inhabitants of the valley, are decidedly the finest I have ever seen. They are square in shape, resting on four legs and are well finished. They have also taken out some stone axes and arrow heads, which are much like those found in the Southwest of the United States. —(Lumholtz, *Unknown Mexico*, vol. i, 87–88, 1902.)

Scattered ruins, mostly rude and comparatively unimportant, are found throughout eastern Sonora and in various sections of Chihuahua. The most common types in eastern Sonora are the remains of single houses; from ten to fifty of them, with a substructure of rubble, irregularly scattered, and separate enclosures, also of rubble, forming a village. As the superstructure has disappeared, the material was of a perishable nature. In some instances, the buildings are distinguished from the enclosures by double foundation walls. Other ruins are represented by low mounds, largely composed of gravel, the structures so completely decayed as to render it impossible to trace the forms. One striking negative feature of the ruined villages is the absence of defensive structures. The ancient pottery found in the ruins is mostly coarse and thick, often striated with irregular incisions on the outside, the painted variety being rare and in some ruins entirely wanting.

A statement by Casteñada regarding this immediate section at the time of Coronado's passage through it (1540) may throw some light on the low mounds mentioned. "Every morning the caciques of the village go to the top of little eminences of earth built for the purpose, and for more than half an hour call out like public criers, notifying every one what he is to do. Their temples are little houses around which they plant a quantity of arrows when they look for war."—(*Cibola*, 157.)

One type of ruins of this section which has received some attention is the *cerro de trinchera* or "fortified hill." Lumholtz makes special mention of them as numerous in

the wild and uninhabited regions of the Sierra Madre, and describes them as built of stone and perched on mountain tops. Occasionally the structures are surrounded by fortications. Bandelier describes a fortified hill at Batonapa, a short distance south of the village of Banamichi, as consisting of low and rude walls of volcanic rock piled up along the brink of the mesa. The highest point of the mesa was occupied by a lozenge-shaped enclosure, eighty-two by seventy feet, the wall, some three feet high and five feet thick, built of boulders laid up with some neatness, but without mortar or mud. No traces of dwellings were discovered, and but little pottery and some fragments of a metate found. The place was apparently a temporary retreat of the people of the villages which occupied nearby points now marked by ruins. Some examples of these so-called "entrenched mountains" were observed by McGee during his visit to Sonora in 1895, which were similar in type to those mentioned.

Bandelier discovered near Carretas, in Chihuahua, ruins of ancient habitations of a different type from those of Sonora, resembling, as he thought, the ruins on the Gila and lower Salado. They consist of low mounds of white earth, bearing indications of buildings larger and more substantial than those of Sonora. The walls of these buildings were of the same material as the mounds—in other words, chiefly adobe, with some traces of stone work. The mounds, which seemed to be foundations for the buildings, were only about five feet high. Numerous well-painted potsherds were scattered over the mounds, and fragments of metates and crushing pins were also observed. The rubbish showed that the buildings were of white adobe, though but slight traces of their outlines remained.

Lumholtz who subsequently visited some of the same points mentioned by Bandelier, but extended his explorations further to the south, mentions—in addition to Casas Grandes noticed on a preceding page—a number of ruins found in the country of the Tarahumers. Among these

are a number of remarkable "cave houses" or cliff dwellings, some of which, according to the diagrams given, contained regular rectangular rooms with doors and roofs, and, in some instances raised to two stories high. One of these caves in the valley of Piedras Verdes River, appeared to have been occupied for a long time, as the houses in it showed many alterations and additions, and the explorer counted as many as twelve coatings of plaster and whitewash on the walls. The conventional design of the ear of corn was well preserved in every doorway.

"The houses here," says Lumholtz, "as well as in all other caves we examined, were built entirely of a powdery substance, the decomposed material of the cave itself. . . . The ancient builders simply had to mix it with water and mould it into bricks, which though fairly uniform in thickness, were very irregular in size." What he considered the most unique feature of the abodes was a cupola-shaped structure placed in front of the houses or in some open part of the cave. They were of various sizes, one measured twelve feet in height and eleven in diameter, and had a little doorway on one side. This, which he found was a granary, was made by coiling grass rope and coating it thickly with mortar.

At another point on Aros River, in addition to the remains of the cave house containing some fifty-three rooms, there were in the central part of the cave a number of small cupola-shaped structures, similar to the one above-mentioned, built of similar materials and in the same manner. They appeared to have suffered less decay than the buildings. Lumholtz says they are almost identical in form with the granaries used at the present day in some of the southern States of Mexico. It is noticeable, however, that none of the cave remains described by Lumholtz show indications of great age. In fact he informs us that he saw a few, some two or three, that were yet inhabited, though they showed remains of an earlier occupancy. At Iztlan, in Jalisco, Lumholtz obtained quite a number of apparently

ancient clay images of the human form, which were of considerable interest because of their approach in some respect to the distinct Mexican type. He also collected some beautiful specimens of ornamented and colored pottery in Diego, Casas Grandes, and in the Tarahumer country. The designs on these specimens, as well as the forms of the vessels show an evident relation to the best early pottery of the Pueblo section.

One of the most interesting ruins of central Mexico is that of Quemada or, as known locally, Los Edificios, which may be said to mark the boundary geographically and in regard to culture types between the more northern Pueblo section and the region of more advanced culture of southern Mexico and Central America.

These ruins, which are the most noted of the northern area, are located about thirty miles south of the capital of Zacatecas and six miles north of Villanueva. The name Quemada, "burnt," is that of a hacienda a mile or two southwest of the ruins, and not properly applied to them. That the place was in ruins as early as 1640 is known from the statement by Fr. Tello (*History of Nueva Galicia*) that the Spaniards under Captain Chirinos, one of the officers under the bloody-handed Nuñez de Guzman, "found a great city in ruins and abandoned; but it was known to have had most sumptuous edifices, with grand streets and plazas well arranged, and within a quarter of a league four towers with causeways of stone leading from one to another." This city has been identified beyond doubt with Quemada.

The ruins are situated on a low, isolated mountain or ridge with three summits. It is claimed by some of those who have visited the place that in compactness and plan, in structural quality, and especially in differentiation of purpose, they exceed not only Casas Grandes of Chihuahua or Zape in Durango, but also the celebrated Tula in the south. Hrdlicka, who visited them in 1902, expresses the opinion that they exhibit evidence of considerable age,

yet, excepting some recent spoliation, they are remarkably well preserved. The same writer contends that the ruins are not those of an ordinary town or pueblo, but were defensive structures, and formed unquestionably the most elaborate fortification in the northern part of Mexico. This opinion agrees with the fact noted by Bandelier that, after leaving the Pueblo section and going south, the tendency was to differentiate the citadel from the dwelling structures.

As Hrdlicka gives the most recent description, we quote it as follows:

The ruins consists of: (1) Some outlying structures and terraces on the south. (2) A great temple and courtyard on an artificial (or at least partly artificial) high stone terrace that runs from the main hill eastward. (3) A main pyramid, built on an artificial stone terrace on the east of the main hill, a little northward from the temple. (4) The main hill structures, built on several more or less artificial stone terraces. (5) Two structures between the main ruin and the more southwesterly hill. (6) A structure on the summit of the southwestern hill. (7) A structure in the depression between the northwestern and the northern hill. (8) Fortifications. (9) Connecting avenues and diverging roads.

1. The outlying part of the ruin consists of a pyramidal stone structure, now crumbling; a large, low flat terrace; a single straight row of ruined houses extending toward the base of the main ruin hill; and a broad, elevated avenue, paved with slabs laid flat, extending from the low terrace to that on which stands the temple. On the lower part of the southwestern slope of the main ruin hill are several regular, terraced rows of ruined dwellings which connect with the other outlying structures by the single row of houses above referred to.

2. The temple is nearly square. The walls, which are built of selected flat stones of medium size, still reach a maximum height of ten feet and are five to eight feet in thickness. Within the temple are eleven, mostly well preserved, perfectly cylindrical pillars, about five feet in diameter, built of selected smaller flat stones, laid in adobe-like mortar (now largely washed out) and reaching approximately the same height as the walls. The temple opens into a large stone-filled court. The walls of the latter structure are lower than those of the temple; they are also not so thick and are not so well preserved. The row of columns that M. Tarayre mentions as having existed here have disappeared. One particular feature which I encountered in the court is some stone cysts, exactly like those found nearly seventy miles distant in the "temple" at the Banco de las Casas ruin in Jalisco. Near where apparently the entrance to the temple courtyard was situated, and just

at the proximal end of the paved avenue leading from the outlying structures to the temple is a small, conical mound of stone. On and about this mound, and between the stones composing it, I found a number of fragments of pottery, among which were several with the paint inlaid variety of decoration such as I recovered from Totoate and as was found at Momax, north of Tlaltenango.

3. The great pyramid stands quite isolated in a large, quadrilateral, court-like space which opens eastward. The structure was apparently connected with the temple by an avenue or plaza. The stones from which it is built and the manner of building are similar to those of the walls throughout the ruin. It still stands about thirty-five feet in height on a wider stone terrace from six to twelve feet high. The pyramid is quadrilateral, each side measuring sixteen meters at the base, with diameter gradually diminishing towards the summit, which is blunt and partly destroyed. The sides of the structure are oriented, although not perfectly. The walls are cracked and otherwise damaged, and only a mild earthquake, fortunately rare in this region would perhaps suffice to demolish it. At the base of the main ruin hill and nearly in line with the pyramid is a cave of moderate size, the floor of which is paved with flat stones while the walls are blackened by smoke.

At some distance from the pyramid and cave there are some small scattered ruins, and the earth is sparsely mixed with small sherds of crude as well as of a better quality of painted earthenware. A stone flake may be found now and then. The whole place is thickly overgrown with tuna, making a full view of the lower structures very difficult.

4. The main ruin hill presents three large, more or less artificial, stone-built terraces which are barely accessible. Each of these terraces contains ruins of dwellings as well as of structures that probably served for ceremonial purposes and for assembly. Throughout the terraces the quadrilateral form of construction prevails. In one spot only, on the middle terrace, may an exception be noted in a circular, kiva-like outline in the middle of one part of the ruin. The walls are always thick and are built throughout, in the same manner, of not very large, selected, more or less flat stones, the exposed face of many of which has undoubtedly been roughly fashioned, but in no case nicely hewn or rubbed down. It is probable that the stones were laid in some sort of adobe mortar, as mentioned by Tarayre and others, but if so it has weathered away. The terraces, which must have cost an immense amount of labor, are in regular but steep slopes, and are built in nearly the same manner as the walls of the various other structures.

The character of the terraces and walls is much like that of the ruins of the Totoate group and of those in southern Zacatecas, but the proportion of masonry in La Quemada is incomparably greater than that of any other ruin group. The construction in La Quemada reminds one also of that of the ruined stone-built pueblos in New Mexico and

Arizona, although there are some pronounced differences between the former and the pueblo ruins of the north.

On the eastern portion of the first terrace is a ruin of a structure that consisted of a number of rooms of medium size. Farther westward are other ruins in poor condition. The middle terrace, apparently the most important one, shows high, fairly well preserved walls of large buildings which originally must have been at least two stories high. There is also a quadrilateral court, near the northern side of which is a small, flat-topped, stone-built, terraced pyramid, about ten feet high. The third terrace contains smaller ruins. On the southern slope of this part of the three-peaked mountain are, as mentioned before, five or six rows of ruined dwellings on low terraces. The very top of the main ruin hill is barren.

5. In the shallow saddle between the mountain last mentioned and the southwestern part is the ruin of a massive quadrilateral structure, and near this is the remnant of a stone terrace.

6. The summit of the southwestern hill contains the ruin of a large stone house that must have been of more than one story and which contained several rooms. There is also near this house a pyramidal stone mound.

7. From the ruin just mentioned an avenue, not indicated on Tarayre's plan, slightly terraced and paved, leads downward toward the northern part of the mountain. Just at the base of this part is found, on a high terrace, the well-preserved ruin of another building of moderate size. Slightly behind this building is a regular space and some low ruins.

8. The entire northwestern hill and the whole of the northern hill are surrounded by a well built defensive stone wall, ten feet broad (and even broader at the northwest), and in places from ten to twelve feet high. Formerly, according to Tarayre's plan, a similar wall extended also along the northern side of the southwestern hill, but to-day only traces of this remain. Some rude breastworks are intact on the western slope of the main ruin hill, commanding the saddle between this and the west; and there are various other structures which probably served as fortifications. Wherever the walls or fortifications end, the mountain presents either steep or totally inaccessible sides, or the bulwarks of the stone-built terraces. Altogether there rises before the visitor an imposing massive, walled fortress of stone, not unlike some of the feudal strongholds of mediæval Europe.

9. Besides the avenue leading from the outlying works to the temple, that from the temple to the great pyramid (now traceable only with difficulty), and that leading from the ruin on the top of the southwestern hill to the one at the base of the northern part of the mountain, there can be made out, especially after the first rains of the wet season, owing to the difference in the color of the earth and other signs, several roads

radiating from La Quemada in various directions. On occasions, I was informed, these roads can be traced for considerable distances.—(Hrdlicka, *Am. Anthrop.*, new series, vol. v, 436–439, 1903.)

These ruins form unquestionably the most interesting and most important archæological feature of northern Mexico, and bring before us the beginning of a type of structures pertaining to a somewhat higher grade of culture than any before encountered during our progress from the supposed point of original entrance of population. Although attention will be called specially to some of the features of these ruins, we turn aside for a moment from descriptions to consider briefly the probable antiquity of the archæological remains of this southwestern section, in which we have included northwestern Mexico as far as Durango.

Although our notice of the remains has been very brief and incomplete, entering but slightly into details, yet when they are carefully studied it will be found that they fail to furnish any positive evidence of great antiquity.

There is nothing in the Pueblo ruins, or in those of the Salado and Gila valleys, or in those of Casas Grandes and of the valley of Sonora River which bears the marks of very great age. It is true the climate is dry and decay is slow, which renders it difficult to judge of age by the condition of the remains. Nevertheless, the general character of the ruins, their easy and ready interpretation by the structures and artefacts of historic times, to which there are no marked exceptions indicative of a widely different culture or varying types, fail to impress the student with an idea of great antiquity. However, we omit Quemada from consideration in this statement.

The ruins, for the greater part, bear evidences that the inhabitants cultivated maize, and in some instances cultivated or at least were in possession of cotton. Now, it is true that the cultivation of these plants reaches back to an early date, and the evidence of their use by the people who occupied these now ruined edifices is no evidence against their age, but it does bring into the discussion another and

important question regarding the progress of culture in this and the more southern section.

It is claimed by several of the authors treating of the ancient history of North America that in the southwest section referred to we see the beginnings of the advanced culture of southern Mexico and Central America, and it is now almost universally admitted that the general movement of population in the Pacific section has been southward; in other words, that the remote ancestors of the Mayas, Aztecs, Zapotecs, and other tribes of the southern sections came from more northern regions.

Dr. Fewkes, during his study of the prehistoric culture of Tusayan (Hopi), was led to ask the following questions regarding the problems of this culture: "Was it autochthonous or derivative? What is the meaning of its many resemblances to the culture of Chihuahua and Sonora? What explanation shall we give to the existence of Nahuatl words in Hopi linguistics and their wide extension among Shoshonean peoples, pointed out by the acute student Buschmann? Were the ancient people of Tusayan more closely related to the Sonoran or to the Oregonian divisions of a Shoshonean group based on similar idioms or word equations? We are emphatically told that they were wild tribes who have adopted a sedentary life; but how shall we explain the many likenesses in culture to Tusayan? Has the culture of the northern states of Mexico been derived from this region, or is the Pueblo area the northern frontier of a higher culture to the south into which it grades without break?"

These questions, except those which relate peculiarly to the Hopi (Tusayan), and the further inquiries "how old is this culture?" and "whence came the Pueblo tribes?" are the questions which confront us, but which, as Fewkes remarks, "no one can yet satisfactorily answer because of poverty of accurate data." However, the ten years which have passed since this was written have added a little to our knowledge of this region and the other sections referred to;

and though the additional light thrown on the problems is not sufficient as yet to solve them satisfactorily, it does eliminate some former theories and narrows the limits of investigation.

The questions which are asked regarding the linguistic relation of the Shoshonean dialects to the Nahuatlan have been answered by philologists generally by including the former in the great Nahuatlan stock. The questions "was this culture autochthonous or derivative?"—applying the term "autochthonous" to the Pueblo district only,—and "what is the meaning of its many resemblances to the culture of Chihuahua and Sonora?" may be comprehended under one head, as an answer to one will be an answer to both and also to the further question, "has the culture of the north Mexican states been derived from the Pueblo area, or the reverse?"

We begin the investigation of the points involved in these questions with suggestions as to the last, extending it, however, over the more advanced culture of the southern sections. Assuming that the general movement of population has been southward, has the type of culture started in the Pueblo region advanced in grade in the same direction until it culminated in the semicivilization of Central America? Although this point will be more fully examined after we have noticed the more important ancient monuments of southern Mexico and Central America, it is necessary to consider it in one light before passing on.

Short (*North Amer. Antiq.*, 518, 1880), after expressing the opinion that the Nahuas, moving southward on the Pacific slope, divided into two groups, one crossing the mountains to the Atlantic side, remarks of the other group: "The remainder of the Nahuas, we think, instead of crossing the Rocky Mountains, migrated southward into Utah, and established a civilization the remains of which are seen in the cliff-dwellings of the San Juan Valley and such extensive ruins as exist at Aztec Springs." However, he adds: "It must be conceded that this hypothesis rests

on linguistic and traditional evidence, as no affinity between the architecture of the Cliff-dwellers and either the Mexicans or Mound-builders is traceable."

Payne (*op. cit.*, ii, 411–12) touches the subject as follows: "The principal historical people of the New World, the Nahuatlaca, are traceable by ethnological resemblances to a district on the Pacific coast in the neighborhood of that assumed by us to have been the original seat of the two peoples last named; there are, indeed, certain indications which suggest an original connection, at some remote time, between the three stocks. If our conclusions are well founded, they were connected in a much nearer degree with a congeries of small groups which are still seated on the Pacific coast in British Columbia, from whose neighbourhood they had emigrated many centuries before the conquest. At this date their northern limit seems to have been near the northern boundary of Arizona and New Mexico. The stock has since shifted still further in the same direction; and its modern representatives now only touch in a single district and for a short distance, the right-hand bank of the Rio Grande."

Dr. Fiske, in his *Discovery of America* (i, 82 and 86), speaks of the advanced culture as beginning at Zuñi and increasing in grade thence southward. "The pueblos which are still inhabited seem to furnish us with the key to the interpretation of those that we find deserted, whether in Arizona or in Guatemala."

Bandelier, in more than one of his works, speaks again and again of the gradual change in architectural forms from those in the Pueblo region to those of southern Mexico and Central America. "It seems," he remarks, "that between the thirty-fourth and the twenty-ninth parallels of latitude the aboriginal architecture of the Southwest had begun to change in a manner that brought some of its elements that were of northern origin into disuse, and substituted others derived from southern influences; in other words, that there was a gradual transformation going on in ancient aboriginal

architecture in the direction from north to south."—(*Final Report*, part ii, 578, 1891.)

Dr. Fewkes, in the paper indicated above, quoting the statement by Nordenskiold in regard to the people of the pueblos, that "They were nomadic Indians whose culture had been considerably modified and in certain respects elevated by altered conditions of life. The evolution of this culture had nothing in common with that of the ancient Mexican civilization, but during its decadence it was perhaps influenced in some respects by the latter,"—replies as follows:

"I have purposely omitted to speak of the possible origin of Tusayan culture or its antecedents before the settlement of Sikyatki, regarding this as beyond the province of this communication. When this pueblo was in its prime the character of the Tusayan culture was no less distinctive than it is to-day and was as far removed as in modern times from that of the wild Shoshonean nomads. Near the close of this memoir Dr. Nordenskiold says of the Pueblos: 'They were nomadic Indians, whose culture had been considerably modified and in certain respects elevated by altered conditions of life. The evolution of this culture had nothing in common with that of the ancient Mexican civilization, but during its decadence it was perhaps influenced in some respects by the latter.' Although this view is held in a more or less modified form by several prominent ethnologists, a study of the ancient culture of Tusayan has not led me to accept it.

"I presume every one would agree that the Tusayan Indians were formerly nomadic in the sense that most sedentary people were preceded by a nomadic stage of culture, and that passing from that condition they were in certain respects elevated by altered conditions would seem likewise true, but that the evolution of the Pueblo culture had nothing in common with that of ancient Mexico has not been proven by any facts brought to the attention of ethnologists by Nordenskiold or any one of the school to which his

work belongs. While I can heartily subscribe to the statement that the ancient pottery of the cliff-dwellers is superior to that of the Moki, as Nordenskiold has shown, it is pertinent in following his argument to ask how it compares with ancient Tusayan ceramics. Certainly it is not superior, and if so the decadence must have occurred since Sikyatki fell. It is very improbable that ancient Mexican civilization has had any influence on that period. On the contrary, the likeness of Sityatki pottery to that of the northern states of Mexico and southern Arizona is greater than the modern to the products of Tusayan pueblos in their decadence. While we may be justified in these theoretical conclusions or others of kindred vagueness, archeology is piteously weak in information in regard to the prehistoric character of the Pueblos of the southwest. You can almost count on your fingers the number of specimens of ancient pottery from the ruins near Zuñi in our museums, and few of these have any indication from what Zuñi ruin they came or in what association. The same is true of pottery from the great ruins of the Chaco, the Rio Grande valley, and the cliff-houses of Tsegi. We are crippled when we attempt theorizing by want of data regarding that about which we speculate, and I believe there is no field of American archeology which will reward the serious student with more interesting discoveries than the scientific exploration of the ruins of our southwest."—(Fewkes, *Am. Anthropologist*, ix, first series, 172–173, 1896.) Thomas, in his *Introduction to North American Archæology*, follows the view expressed by Bandelier.

These quotations from recent authorities are sufficient to show that the opinion is very general that the Mexican and Central American culture began in the Pueblo and northern Mexican section and gradually developed with the movement southward. Although the theory is a tempting one, into which the facts seem to fit admirably and without clashing, yet there are certain points of view which do not appear to have received sufficient consideration. Conceding



Statue of the Toltec deity Tlaloc. *From the original found by Le Plongeon at Chichen Itza, Yucatan.*

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the probability that the general movement of population was southward, there is no valid reason why culture, as suggested by Morgan, could not have spread in the opposite direction. This must be admitted unless it can be shown that it is inconsistent with the facts. However, passing this by to be discussed later, we notice that the theory of the progress southward of culture is confronted with the question of the comparative antiquity of culture in the two regions.

If the southern tribes were already in their historic seats, and had made some advance in this culture before the Pueblo culture had begun, then the theory of derivation from the northern group must be abandoned. Is not this in fact the case, so far as it is possible to judge from the data? It is true that 1325 A. D. is given as the date at which the City of Mexico was founded, the date when the Aztecs, according to their tradition, reached the lakes of Anahuac. This, however, was after a long series of migration and warfare, subsequent to their departure from the traditional Chicomoztoc, or "Seven Caves," which we may fairly assume would throw the date one hundred years further back. This, however, which would precede the arrival of the Spaniards some three hundred years, would not be assuming an extravagant antiquity.

But the signs of culture had made their appearance in the southern sections much more than one hundred years preceding the founding of Tenochtitlan, the seat of Aztec power. The Toltecs, or the people so called,—for they were a real people notwithstanding the myths which surround them,—made their appearance, according to tradition, in the seventh century, and their name became a synonym of builder and of culture. But, aside from tradition, the hundreds of ruined structures scattered over Chiapas, Yucatan, and Guatemala are material and indisputable evidences, which reach back to a period unquestionably as early as, and in all probability preceding, the landing of William the Conqueror on the English coast. As will be shown on a

subsequent page, the Maya culture, at the lowest estimate, had begun to appear in material structures by the ninth century, but most likely several centuries previous thereto.

Will those who believe in the spread and advance of culture southward claim an antiquity for the Pueblo culture necessary to correspond with this southern advance and to antedate it sufficiently to allow for migration? Possibly they may be justified in doing so, as the signposts in attempting to trace back the Pueblo culture in prehistoric times are few and exceedingly indistinct. Nevertheless, the relation of the Central American and Mexican prehistoric culture to that of the Pueblo section by intermediate links seems too evident to be overlooked or denied. The problem is a puzzling one, and we leave it for the present and return to the question asked in commencing the examination of this section. Can we find here any traces of the tribes who had preceded the historic occupants in this region and passed onward?

We have the evidence that the Navaho and Apache branches of the Athapascan stock, a fierce and warlike race, entered the section at some undetermined time previous to the coming of the Spaniards and spread over large portions of Arizona and New Mexico, and for some distance into northern Mexico. Yet the Pueblos have continued to exist, protected in part by the Spaniards after their coming. Fewkes, alluding to this subject remarks, in regard to the Hopi, "a people who from 1680 until they passed under the protection of the United States maintained their independence aided by their isolation, against expedition after expedition of the Spaniards, blood-thirsty Apache and relentless Ute and Navaho." It may have been that in the more distant past the storm swept by and left surviving remnants hidden in the caves and clefts of the cañons. Nevertheless, it is most likely that the Pueblo tribes, however formed, entered the section after their predecessors departed, or that they, having dwelt in the country contemporaneously, remained after the others moved on to more tropical regions.

Though these supposed events be assigned to a remote date, if the inhabitants were then sedentary, others who had previously passed onward had probably brought maize into cultivation. The first to pass southward over the section were doubtless in the hunter's stage, and hence left no monuments to tell us of their existence. From what section the historic tribes came we can only judge in part. That the Shoshonean element of the Hopi came from their kindred to the north is quite certain. That a portion of the same group, and of some of the other groups, came from southern Arizona appears to be established by reliable traditions. The others are probably offshoots from or remnants of larger tribes, and most likely originally composite, who in the course of time formed new languages. If they were from a more northern section, it is probable that here they met maize in its slow spread northward and became sedentary, though it must be admitted that this cereal did not have this effect on all tribes which came to this section from a more northern region.

Referring again to the ruins at Quemada, which seem to form the connecting link between the culture of the Pueblo section and the southern region, and which also mark geographically the southern limit of the northern section, we notice some of the added items of culture types found at this point, not present in the more northern ruins. We see here the depressed quadrangular courts, as at Palenque and Copan and elsewhere in the south; the interior supporting columns, as at Mitla. We also see here the intermediate terraced walls, as found in the south, and here also the pyramid assumes, though in embryo, the form so common in southern Mexico and Central America. Stone replaces to a large extent the adobe of the more northern structures, as those of Casas Grandes and Casa Grande, but the thin undressed slabs laid in mortar of clay and straw do not show a great advance in masonry on that of the Pueblos. Nevertheless, the plan, extent, and massive features of the ruins, and the added types mentioned, certainly indicate an

advance in culture. It is noticeable, however, that the triangular arch, or inverted V-shaped ceiling, so common in Yucatec structures and those of other southern sections, is wanting here.

On the other hand, Hrdlicka says that he observed no worked slabs of stone such as are common further south. Potsherds and stone flakes may, he asserts, be found almost everywhere about the ruin, but they are in no place abundant, and at many points are scarce. This author suggests that the structure at this point was built by the combined efforts of a great people living further southward, and possibly including the entire population of the valley of Juchipila, Tlaltenango, and Rio de Bolaños, as a protection against northern invaders (a very doubtful interpretation). The great ruined fort and *teocalli* cannot be separated culturally from those to the south and southwest of it. The inlaid and painted pottery, the ceremonial axes, some of the idols, and the ordinary axes, the peculiar stone cists near the temple, the form of the stone structures—all connect it more immediately with Totoate, Momax, Teuel, and other ruins in southern and western Zacatecas which the author had visited. These, however, are but briefly described, and add no new or additional type to those already mentioned.

It must be admitted that the ruins at Quemada increase the difficulty of solving the problem above mentioned, and add evidence in support of the theory of a gradual advance of culture contemporaneous, if not with the first, at least with some great movement southward. That the ruins show an advance in culture from the north toward the south is beyond question. The missing link without which no theory relating to the problem can be established is the comparative age of the oldest ruins of the two sections. Until some approximation is made in this direction, the theory is in doubt, in fact it is possible the problem is to be solved by an entirely different explanation. We must therefore appeal to the ancient monuments of the southern section that we may learn what testimony they give on this

subject. One fact, however, becomes more and more apparent as we move southward in our investigation of prehistoric remains: it is that if the long line of marching hordes which are supposed to have made their way to and through the length of the southern continent passed over the regions we have noticed, we have found no traces of the footsteps of any save the later tribes who stopped before the isthmus was passed. We are therefore constrained to acknowledge that the more carefully we study the evidence bearing on these questions, the more difficult their solution appears to be, and the more unsatisfactory the general conclusions regarding them become. However, there are yet to be considered several different points from which to approach the question.

## CHAPTER VIII

### *MAIZE THE GREAT CIVILIZER—MITLA—TULA*

As we enter upon the consideration of the antiquities and prehistoric culture of southern Mexico and Central America, we soon become aware that the range of subjects and lines of investigation are greatly increased.

The advanced culture which existed here in pre-Columbian times, as proved by the architectural and other art remains, brings into consideration other problems. One of these which appears to be intimately connected with the sedentary character of the inhabitants of the section, and with the origin of the prehistoric civilization therein, is the discovery and culture of maize. As, besides its bearing on the culture, the investigation of this subject may assist somewhat in approximating the era of occupation and the period of civilization, attention is briefly called thereto before referring to the ancient monuments.

Although it was for a long time a subject of doubt as to the native species from which maize, or Indian corn, was developed, and where, on the continent, this species was found, it is now generally conceded by botanists that, at least in North America, it originated from one or more species of *Euchlæna*, in Guatemala and Mexico.

De Candolle was inclined to derive it from a Nicaraguan species, and expressed the opinion, in his *Origin of Cultivated Plants*, that the question would be decided, if at all, rather by archæological discoveries than in any other way.

Harshberger expresses the opinion, in his paper on maize (*Maize: A Botanic and Economic Study*, 1893), that *Zea*, *Tripsicum*, and *Euchlæna* originated from a common, remote ancestor. However, the opinion prevails that the cereal was developed in North America, probably in two varieties, from the *Euchlæna luxuriana* of Guatemala, and the *Euchlæna Mexicana*, Mexico. The former approximates most nearly to the cultivated corn generally in use, and this, it is said, is most consistent with the fact that the Central American maize was, at the time of discovery, reputed to be larger and more productive than the Mexican variety; and Central America appears in local tradition as the section of the earliest cultivation of this cereal by the Mayan tribes. It is doubtful, however, if the Guatemalan variety was first brought into use.

The finding of maize and the commencement of its cultivation are alluded to directly and indirectly by native traditions of both Mexican and Central American tribes. Although these traditions are largely mythological rather than historical in character, and uncertain as to locality and date, they point clearly to the fact that these tribes obtained their first knowledge of maize in the southern section, though possibly before they reached their historic seats; and that it was brought into use about the time or soon after their arrival in the southern section. In other words, it contradicts any theory that they had discovered it while in a more northern section. In some of these traditions, as those of the Cakchikels and Kiches, it is intimated that the tribes found it already in cultivation, at least in one place. It is stated that their culture hero, anxious to feed man on more substantial food than wood and leaves, through the aid of two brutes found maize in cultivation at a place called Paxil, sometimes Paxil-Cayala. Those found cultivating it are spoken of in the Cakchikel tradition (*Annals*, 69, 1885) as "brutes,"—the Coyote and Crow,—the native author, no doubt, alluding to, in his opinion, a savage or uncultured people. Paxil-Cayala, "place where the falling

waters divide," is located by Brasseur de Bourbourg in Chiapas.

Although these traditions are largely intermixed with the native mythology, they indicate, as stated, the section where the particular tribes mentioned discovered corn, and that others who preceded them had brought it into use. The locality, however, was not their final resting place, where Iximche was made their capital, but some point more to the northwest, though apparently not very distant, to which that mysterious and constantly recurring name "Tulan" was applied.

As the names of the leaders in this final migration of the Cakchikel tribe are given in their *Annals*, as well as the names of their successors in office,—or kings as they are termed,—down to the age of the native author, who was living at the time of the Spanish conquest, Dr. Brinton estimates therefrom that this migration occurred about 1380 A. D. This, however, is recent and stands strangely in relation to the statement in the introduction to the same work that it required two thousand years for the differentiation of the Cakchikel language from the Maya stem; a statement which, though made by another, is accepted by Dr. Brinton. Harshberger gives, in the work quoted, the commencement of the Christian era as the extreme time limit of the cultivation of maize. This, however, is based upon his supposition as to the time when the Mayas "emerged from obscure savagery," which he says "is not known, but it was not earlier than the advent of the Christian era."

The distribution of maize at the time of the discovery furnishes some indication of the time it had been in use. Assuming, as may fairly be done from the known data, that it did not first come into use north of central Mexico, it follows that it had travelled to the points north thereof wherever found in cultivation. Harshberger (*op. cit.*) tells us, on what authority is unknown, that it reached the Rio Grande by the year 700 A. D., and also that it reached the coast of Maine by the year 1000, evidently using the

statement in the Icelandic saga in regard to what Thorfinn Karlsefne saw growing in Vinland, as heretofore mentioned. He also states that the Incas had it in use as early as 700. However, as all these statements are largely guesses backed by no proof, they must be accepted only as guesses. It is known that it was cultivated at the advent of the whites as far to the northeast as Montreal, Canada; as far to the northwest as the southern border of Utah; and as far north in the Mississippi valley as the mouth of Minnesota River, in other words, as Brinton has stated, substantially to the climatic limits of its cultivation by the Indian method.

In judging as to the time required for this spread of the cereal over the entire eastern half and a considerable portion of the western half of the United States, it is necessary to take into consideration the change of customs in the tribes through the use of this food plant. It has been a very common custom of writers in the past to speak of the Indians of the United States at the time of settlement by the whites, as roving, unsettled savages. This is an error, as there were but few, if any, tribes east of the western plains and south of Ottawa River without a fixed seat, and relying to a greater or less extent upon the cultivation of maize for subsistence. It is true that the people of most of the tribes roamed over the country to considerable distances on their annual hunts, or in war parties, or on raiding excursions; yet they had their well known territorial seats and their village homes. This semi-sedentary condition was brought about by the introduction of maize; and in consequence thereof many new customs were introduced and some old customs abandoned.

The time necessary for this cereal to travel from tribe to tribe over this broad extent of country, and work the changes in the mode of life of the natives, transforming nomadic savages into semi-sedentary tribes usually occupying permanent villages, as found true at the time of discovery, must have required several centuries. We are, therefore, probably justified in assuming some four or five centuries

as the shortest limitation. The evidence drawn from the mounds, that where mounds were built in North America it is safe to assume that maize was cultivated, might be added here, but its value in this respect cannot be determined until these ancient monuments have been discussed. There are, however, other lines of evidence bearing upon the question of the antiquity of the discovery of maize which must be considered before reaching a conclusion on the point.

Our object in treating this subject in this manner is twofold: first, because of its important bearing upon the question of the origin and advance of the higher native culture of the Mexican and Central American tribes; and secondly, to approximate from the most reliable data the latest date which can reasonably be assigned to the discovery of maize, leaving the question of the remotest date open for the present. The importance of the subject in this respect does not appear to have been fully appreciated. It is an element in the discussion of the age of the remains of every section where the cereal was cultivated in the prehistoric era. One object in view, therefore, is, instead of reaching conclusions by mere guessing, to approximate by all available data bearing on the subject the most recent date of the discovery of the cereal consistent therewith. This will form a basis for tracing back the indications which seem to point to the earliest limit. It is probable that Harshberger is right in deciding that the discovery of the cereal did not precede, at least to any great extent, the commencement of the Christian era; but he fails to give the evidence upon which he bases this opinion, or, rather, bases it upon the supposed age of the monuments of Central America, as its cultivation must have been contemporaneous, thus, as De Candolle had previously done, handing the problem over to the archæologist to be solved by his investigations.

De Candolle has shown that language furnishes some aid in investigations relating to the origin and distribution of cultivated plants. Harshberger attempts to follow out this

hint in its bearing on the distribution of maize. Although we cannot agree with all his conclusions in this respect, we avail ourselves of the data he has so diligently collected, though relying very largely on a much fuller list of the names of the cereal in the various Indian languages of North America and of the northern coasts of South America, made out since the publication of Harshberger's paper. This author, basing his opinion on the names for the cereal in the various dialects of the widespread Algonquian stock, concludes that it must have been received "while they still formed one nation." This would certainly carry back the origin of maize to a very early date, but, unfortunately for this conclusion, the people of the region north of the Great Lakes (Huron and Superior), where Hale and Brinton appear to locate the combined group before the spread of its divisions, do not appear to have cultivated maize until after the arrival of the whites; nor does a comparison of the terms appear to sustain the opinion of this author. Yet this comparison does show that the names from the Abnaki of the Atlantic coast to the Crees of Manitoba were based on the same radical. The Choctaw *tonche*, Chickasaw *tunche*, Quapaw *uah-tonseh*, Osage *wau-tanshee*, Omaha *wat-tanzee*, Oto *watooja*, Ponka *watanziv*, and Yancton *chantee*,—names by tribes of different stocks,—indicate that the cereal travelled up Mississippi River, which is very probable. However, the names in the region in which the cereal originated are of much importance in this discussion, and fortunately there is one fact brought out by a comparison of the names in this southern section which has a very important bearing on some of the questions relating to the prehistoric times of that section.

A comparison of the names of this cereal in the eighteen or nineteen dialects of the Mayan group shows practically no variation except in the single instance of the Huasteca, where *isis* or *iziz* is used instead of the common name, *ixim* (pronounced *ishim*). This uniformity in the term employed by the various tribes scattered over Yucatan, Tabasco,

Chiapas, and Guatemala is remarkable, and can only be explained by the theory that the cereal came into use when the tribes formed, or were practically united as, one nation; or that it was discovered by some one or more of the tribes in their historic seats and passed from one tribe of the group to another, carrying the name first given with it, which is much less likely than the first supposition. The Huasteca, lying far to the north, on Rio Panuco, Mexico, and in close contact with Aztec settlements and the Aztec language with its sibilants, modified the name to *isis*.

The first theory would, if Thomas and Bandelier are right in regard to the prehistoric movements of the Mayan tribes, locate their first use of maize in southern central Mexico, somewhere in the region of Anahuac. It is certain that the most consistent and best authenticated data obtained indicate that the Guatemalan tribes had separated from the others previous to entering this region, the annals both of the Kiches (as given in the Popul Vuh) and the Cakchikels (as given by Xahila) indicating some northern point as that from which they migrated after separation. The most conservative view in regard to these movements, consistent with the data, places the united group somewhere in central Mexico. It follows, therefore, if this theory be adopted, that we must believe that maize first came into use among these tribes in Mexico and not Guatemala, though the Guatemalan variety may have come into use a little later on. It is noticeable in this connection that the name for *tortilla*, or "corn bread," is, so far as known, substantially the same (*vuah*, *vua*, *vuay*) in all the dialects except the Huasteca, in which it is *bacam*.

It must therefore be conceded that the unvarying uniformity of the name for maize in the various Mayan dialects, which otherwise differ considerably from one another, is strongly indicative of discovery before division. At this point in the investigation, however, there intervenes that puzzling factor of ancient Mexican history—the Toltecs. It is not our intention to discuss this mysterious, but not

mythical people, at this point, except so far as the subject bears upon the question of the discovery and early use of maize. If the Toltecs were the ancestors of the Mayas, as held by several recent authors, then it is evident that maize had been discovered and brought into use before they reached their historic seats. It will be assumed here as the most acceptable solution of the problem, that there was beyond doubt a people designated by the term "Toltecs," a people who were real and did exist, and did erect some of the works attributed to them; but a people around whose traditional history has gathered a haze of myths which must be brushed aside in order to reach that which may be accepted as true. Chichimecas and Toltecs are names which several authors in the past were disposed under the strong influence of Dr. Brinton to banish from the realms even of traditional history; they are now, however, being brought forward as proper subjects of historical research.

Harshberger's statement that it is probable that maize reached the Rio Grande by 700 A. D., although, as stated above a mere guess, was based on Humboldt's assertion that "the Aztecs" learned of maize in 666. This statement, however, alludes not to the Aztecs proper but to the Toltecs, who, according to the most authentic traditions given by the early Spanish writers, entered the Anahuac region before the close of the seventh century and long before the Aztecs reached it. As they were a cultured people, or at least are so described in the traditions, the name being considered as equivalent to "artificers," they were certainly agriculturists, and though the mystery which hangs about them may never be dispelled, they were beyond doubt a people, and by them, whoever they were, advanced culture was practised, and agriculture was adopted as a means of obtaining a food supply.

It is undoubtedly true, as has been so often asserted, that the civilization of Mexico and Central America was largely due to the adoption of agriculture as a means of obtaining a food supply; in fact, where large animals capable of being domesticated for food and other purposes are

wanting, the basis of sedentary life and advanced culture necessarily is agriculture, and in prehistoric America, agriculture meant chiefly the cultivation of maize. Payne, in his interesting work to which we have had occasion to refer so frequently, contends that in general the cultivation of roots has preceded and served as an introduction to that of cereals, though he admits that the "materials for verifying the conclusion are scanty." The admission is a saving one in regard to aboriginal cultivation in North America, as it was the ease with which maize could be cultivated and its bountiful yield which seems to have brought about the cultivation of a few other plants. In fact, there does not appear to be any proof that in North America, exclusive of the West India Islands, the potato or any other root was cultivated before maize. Moreover, this author expressly bases the advanced culture of Mexico and Central America upon the cultivation of maize.

Hubert Bancroft speaking of these civilized nations says: "Cultivation of the soil was doubtless the first tangible step in the progressive development of these nations, and this is indicated in their traditional annals which point, more or less vaguely, to a remote period when the Quinames or giants occupied the land as yet untilled; which means that the inhabitants were savages." He adds that "the introduction of agriculture was doubtless of very ancient date. The Olmecs and Xicalancas, traditionally the oldest civilized peoples in Mexico, were farmers back to the limit of traditional history."

It is unnecessary, however, to carry further the process of feeling our way back thus step by step toward the origin of maize cultivation, when it is evident that it coincides with the origin of culture, which must be ascertained, so far as this is possible, through archæology and the best authenticated traditions. As the discussion of these lines would anticipate the notice of the archæological remains of this southern section, reference will be made here to but one or two items of evidence on the question of antiquity.

Thomas, who is perhaps our best authority on the mounds of the United States, concludes, from his study of them, though not attempting to determine their antiquity, that one thousand years preceding the advent of the whites would suffice for the beginning and development of the mound-building custom and the construction of all the known works. This would carry back the commencement of the mound-building era and the cultivation of the soil to the fifth or sixth century of our era. Dr. Brinton, using the katuns or twenty-year periods mentioned in the Maya chronicles known as the *Books of Chilan Balam*, makes the date of the first Mayan migration to Yucatan about the close of the second century; though it appears from these chronicles that it was a century or so later before permanent settlements were made. The value of this calculation is doubtful, however, as the calendar dates are uncertain when referred to our system.

Finally, on this point, evidence of the cultivation of maize is found in a very large portion of the ancient monuments of the country wherever there is ornamentation. It is found abundantly in all the Maya and Mexican codices, and indications of it are also found in the calendars of both races; hence it must have been in use at the initiation of this strange time system, which reaches back to the building of the oldest monument of Central America. Although the students of American paleography have discovered the interpretation of the time and numeral symbols of the Maya inscriptions, no connecting link between that system and our Gregorian calendar has yet been ascertained with certainty; nor can the dates in our time system of the erection of the monuments be ascertained therefrom.

It would seem from this brief examination of the data bearing upon the commencement of maize cultivation in the southern civilized section that it may be carried back by the best available data to the third or fourth century of the Christian era or to an earlier date; and possibly to the sixth or seventh or even the fifth century in the mound area

of the Mississippi valley and Gulf States. Can the beginning of Pueblo culture be carried back to the most remote date given? Leaving the subject at this point, attention will be called to the various lines of the more advanced prehistoric culture and the monumental and traditional evidences thereof.

It has been correctly stated that the civilization of this section of North America is not limited by tribal or stock boundaries, but seems to have prevailed throughout the entire region reaching from near the latitude of Tampico, in Mexico, to Nicaragua, notwithstanding the fact that it was occupied by some seven or eight different stocks. Besides the Aztec or Nahuatlan and Mayan, there were also included at the time of the discovery, the Zapotecan stock, located chiefly in Oaxaca; the Tarascan, in Michoacan; the Totonacan, in Vera Cruz; the Chiapanecan, in Chiapas; and the Otomian, of central Mexico, in part. Notwithstanding this diversity in stocks, there was such a general similarity in the culture types of the different districts as to make it evident that it was one civilization, having one origin, developed in one age or era, and that the culture of the different stocks were not parallel civilizations which had developed side by side, as maintained by some authors. Nevertheless, there were minor differences in type which were ethnic and indicative of the stock in which they originated.

The chief lines along which the advanced culture was most manifest were architecture, sculpture, painting, symbolic writing, the calendar system, agriculture, and political organization. As this advance is most manifest to the casual or general observer in the architectural remains, attention is called first to some of the leading types in this line.

As mentioned in the preceding chapter, the ruins at Quemada, in Zacatecas, show decided analogies to the southern remains. It is true that no sculptures, hieroglyphs, pictographs, or architectural decorations are found there, but decided similarities are noticed in the other respects mentioned.

As no important monuments have been found in the Tarascan territory, we turn first to the Zapotecan area to take a brief survey of the ruins of Mitla so often mentioned and figured in modern literature. Here, as is at once apparent, the type is peculiar, many features in plan, construction and finish will be found new to the student who has devoted attention chiefly to Nahuatlan and Mayan structures; differences which will become apparent to us as we pass, in our brief survey, to those of other districts. The buildings are only a single story in height; and the groups or compound structures consist usually of four—occasionally of but three—rectangular buildings placed so as to form the sides of a square court; the four approximating or, as in most cases, touching—but not overlapping—at the corners. We are not aware that mention has been made of the resemblance in the plan of these groups to the rectangular pueblos of New Mexico on the one hand, and to some of the structures at Uxmal—as the Nunnery and House of the Pigeons—on the other. This resemblance, however, will become apparent to anyone who will make the comparison. Is this another link in that inexplicable chain which seems to unite the northern and southern cultures?

The walls are massive, being usually over four feet thick, vertical, and faced with dressed stones or plaster; the inner faces are plastered or partly or wholly covered with geometrical mosaic work. The ceilings and roofs are flat, having apparently been supported chiefly by wooden beams, the triangular arch appearing nowhere in these structures; perhaps it was not known to the builders. Where the rooms or halls are of considerable width, a row of pillars or columns was placed along the middle in order to furnish support to the roof. Wooden beams were placed lengthwise upon these columns, and crossbeams from these to the sides, over which was probably a layer of poles, etc., covered to a thickness of two or three feet with gravel and cement. The height of the ceiling seldom exceeds twelve feet, and the width of the room or hall with a single span is about twelve

feet, but where columns were used to give a double span the width varies from twenty to twenty-three feet. Three methods of embellishment were employed,—painting, sculpture, and mosaic; sculpturing, however, was limited here to geometrical forms, sculptured life forms being entirely absent, though such forms are of frequent occurrence in the painted designs.

The peculiar feature of these structures which has given them special notoriety is the fretwork decorations of the walls. These designs are all purely geometrical, yet varied and pleasing, and are arranged in panels covering the exterior surface of the buildings, and on the interior are in panels or continuous bands. The most remarkable of these are geometrical fretwork mosaics, made up of separate, carefully wrought stones in the form of little bricks, set in mortar to form the designs; some are angular and curved grecques.

Notwithstanding Charney's unfavorable opinion of the painted designs found here, the fragments still remaining in color are worthy of careful study. They are found on the lintels of the doors of the so-called Catholic Establishment and Arroyo groups. The building of the Catholic Establishment group which contains them is the one used by the brothers as a stable. The designs are lines along the recess of the lintels, that portion alone being preserved which has been protected from the weather by the upper projection. These designs were not painted directly on the stone, a coating of grayish color was first applied and given a high polish, and the figures were then painted on this in dark red. Seler gives the remaining portions of these designs in color in his *Wandmalereinen von Mitla* (1875), which are republished in Bulletin 28 of the Bureau of American Ethnology. A glance at them is sufficient to show their strong resemblance to the figures in the Mexican Codices; in fact, several of the figures are so very similar as to be taken for copies.

Pyramids are not absent from Mitla, but none are of sufficient importance in size or otherwise to attract special

attention. The pottery found here is mostly of the plain gray type, though occasional painted specimens occur. The introduction of the human form in connection with the vessels appears to have been a favorite custom of the potters. Bandelier says it was overloaded with ornamentation, grotesque and elaborate, the introduced faces often having noses exactly like the so-called "elephant trunk" ornament of the Yucatec ruins, and enormous head-dresses "encircling rather than crowning the face." This introduction of human and animal forms in the pottery and lintel painting, when human, animal, and vegetable forms were so strictly tabooed from the surface ornamentation of the walls of their buildings, and only geometrical figures introduced, is somewhat remarkable.

But little in the way of tradition or otherwise regarding the prehistoric times of the people of this group has been preserved. Burgon (*Geografia Descripcion*, cap. 71), who wrote about 1650, says that for three hundred years before his time Zapotecs had occupied the pueblos of the adjoining country. This, if the reference be to their arrival in their historic seats, would carry back their occupancy only to the middle of the fourteenth century. The statement, however, evidently refers to a conquest by the Zapotecs of some Tehuantepec tribes, and has no reference to their original entry. Some authors are inclined to believe, and perhaps correctly, that the Zapotecs were the pioneers in the advanced native culture of this section. They had in use, as we learn from Cordova's *Arte del Idioma Zapoteco*, a calendar of the same type as the Mexican and Maya, except in the names and terms used and the symbols employed. Seler concluded from his study of these several calendars that the Zapotec was the original; in other words, that this strange time system originated with the Zapotecs. Although the painted designs upon the lintels of their doorways were evidently Mexican in type and possibly borrowed, yet in other respects the former had made greater advance in culture than the latter; a culture which was unique in some respects.

Of the peculiar features of the Mitla architecture, the mosaic designs and ornamentation of the walls and the lines of columns through some of the halls have attracted most attention, as these are features unknown to the Mayan and Mexican structures. Yet it is a somewhat singular fact that the latter feature—the central pillars—is found at Quemada, where there is a row of pillars running through one of the halls. And here, as at Mitla, a part of the buildings are of adobe, and in both the triangular arch, so common in the Maya structures, is wanting, as are also stairs, though the latter were not needed in the one-story structures.

The Mixtecs, whose territory adjoined that of the Zapotecs on the northwest, extending partly into what is now the State of Guerrero, have been considered as related linguistically to the latter, and are placed in the Zapotecan stock. Although this assignment has been generally accepted, the correctness of the conclusion is somewhat doubtful. The differences linguistically and otherwise are wide; and the evidence advanced by Dr. Nicolas Leon in his introduction to the *Arte del Idioma Zapoteco*, of Cordova, republished in 1886, is by no means satisfactory; in fact, its weakness tends toward the opinion expressed long ago by Friedrich Müller, that the two peoples pertained to different stocks. The importance of this question in this connection is in the bearing it has upon the origin of these tribes, a precisely similar case being found in the relation of the Totonacs to the Huastecas, though in this instance the two have been placed in different linguistic families.

In culture the Mixtecs appear to have been the equals of the Zapotecs, though very few important architectural remains have been attributed to them. Nevertheless, it is said that they had a form of picture or hieroglyphic writing, and, in fact, some of the more recently discovered imperfect codices or manuscripts counted as Mexican, as the so-called *Cacique*, edited by Saussure, and the *Colombino* should probably be ascribed to them. Garcia, in

his *Origen de los Indios* (Lib. v, cap. iv), gives what purports to be an extract from one of their hieroglyphic mythological books.

The relation of the Zapotecs to the Mixtecs appears to have been that of long association rather than that of origin, and there is but little doubt that they must be classed among the earliest inhabitants of southern Mexico. It is possible, as already suggested, that the oldest evidences of the native civilization of Mexico and Central America are to be found here. It is true that the absence of the triangular arch in the architectural remains of this region is not absolute proof of great antiquity, nevertheless, it strongly corroborates that view so long as no other explanation is presented.

The origin of these tribes must remain a subject of conjecture, as their traditional history is virtually a blank. Charney says they believed themselves to be autochthones, and that they are ignorant of their origin. Torquemada mentions a tradition that they were refugees from Cholula; and most of the old writers, notwithstanding the radical difference in language, connect them with the Nahuatlan stock. Others say they formerly resided in Puebla with the Olmecs and Xicalancas; and others, as Sahagun, that they were of Toltec descent. It is probable that the two tribes migrated together from the north and possibly—if the age of the buildings be deemed sufficient—paused at Quemada, and left there in some of the structures evidence of their presence. The inroads of savage tribes from the north, most likely Nahuatlan, forced them to seek a permanent home further south. The only objection to this theory which seems plausible is the doubt in regard to the antiquity of Quemada. It is possible that a more thorough exploration and study of the ancient remains of southwest Mexico will throw sufficient light on this question to give a satisfactory answer.

In passing to another section and another type of works, we leave unnoticed other Zapotec remains worthy of the attention of the archæologist: as, for example, the group

at Monte Alban, where there are great quadrangles surrounded by walls, including mounds, plazas, and depressed courts, and outer terraces. These will doubtless richly repay the explorer who uses thoroughly the pick and spade and also the camera.

The valley of Anahuac appears from the ancient remains found in it to have been the scene of active life and advanced culture long before the Aztecs ended here their wanderings, according to the generally accepted tradition. Here, some fifty or sixty miles north of Tenochtitlan, their imperial city was Tula, Tulan, or Tolan, the city of the mysterious Toltecs, a city whose reality is proved by visible remains. It was here, according to the long current tradition, the Toltecs, coming from some more northern region, fixed their capital in the sixth or seventh century of our era. According to Charney, the ancient city appears to have extended over a level area about the base of Mount Coatepetl, or "serpent hill," through which a muddy stream makes its way. But a small portion of the area occupied by the ancient capital is covered by the modern town.

Most of the few antiquities which have been obtained from the immediate site have been found in clearing the river of some of its mud, or whilst plowing the adjacent fields. The most remarkable of these remains are the fragments of three caryatides or sculptured columns, one of which is of black basalt and of giant proportions. This, which is seven feet high, as figured by Charney, represents only legs; the body and upper portions were never sculptured; in fact, it seems to have been a double column with an expansion at the base in the form of feet. Here also have been discovered parts of another column which presents the unusual feature of having the sections connected by joint and tenon. The sculpturing in this case is clearly intended to give to the column the appearance of a serpent's body, the large scales of the underside being plainly indicated; those of the upper portion being in part feather forms, just as the columns of one of the structures at

Chichen Itza, Yucatan. Possibly this was a column from the temple of Quetzali, which Sahagun represents as still standing in his day, though crumbling then into ruins, as he speaks of it as among the ruins of Tula. He describes it as unfinished, and as containing pillars in the shape of serpents, the heads forming the base. The statement of this early Spanish author and these fragments of snake-form columns tell us too distinctly to be questioned something of the art of the people who built this ancient city. Désiré Charney, who is perhaps, with the exception of Manfred and Ord, commissioners of the Mexican Geographical Society, the only explorer who has attempted any excavation worthy of the name at this place, laid bare, on a neighboring hill, the foundations of two ancient dwellings. One of these contained twenty-four rooms, two cisterns, twelve corridors, and fifteen little stairways. It appears that the floors of the rooms were mostly on different levels. The entire top of this hill was found by this explorer to be covered with ruins of buildings, pyramids, and other structures.

He also found evidence that the inner walls were coated with mud and mortar, and in some cases with stucco; while the outer walls were faced with large baked bricks and cut stone. Here and there were closed passages, walls which had been rebuilt with materials other than those employed in the original construction. This was taken to indicate, no doubt correctly, that the place had been occupied at two or more different periods; that it had in fact been occupied by at least two different waves of population, and by people of different tribes. Tradition in this case also corroborates the monumental evidence, as Veytia (*Historia Antigua de Mejico*) tells us that when the Chichimecs invaded the country under the leadership of Xolotl, they found Tula deserted and grass growing in the streets, but the king was so delighted with the location that he ordered the monuments to be repaired and the town inhabited. It is also said that he followed the same policy at Teotihuacan, mentioned below, and at other places. A

small but important find at this place made known through Dr. Antonio Penafiel of Mexico, was an engraved shell plowed up in the field which covers part of the site of the ancient city. The characters on this shell are pronounced by competent students to be Mayan hieroglyphs beyond question. It is also reported that still another discovery of some article containing similar glyphs has been subsequently made at this point. These finds are important, as they will, especially if corroborated by others, have a bearing on the question of the identity of the Toltecs and the Mayas.

Other pre-Aztecan monuments of the valley of Anahuac are those of Teotihuacan, "City of the Gods," about twenty-five miles northeast of Mexico City. The chief monuments at this point are the pyramids known as those of the Sun and of the Moon, and the highway running past them called the Camino de los Muertos, or "Pathway of the Dead." The pyramid of the Sun, about nine hundred yards south of the pyramid of the Moon, is probably the largest monument of this type on the continent. It has a square base measuring about seven hundred feet on a side, and rises to the height of one hundred and eighty feet, with a level summit of about one hundred feet square, having an angular rise of about thirty-one degrees. There were originally three terraces each about twenty-five or thirty feet wide. The summit, according to tradition, was crowned by a temple enclosing a colossal statue of the Sun, made of a single block of stone, of which, however, no remains are at present to be seen.

The pyramid of the Moon, though not so large as the pyramid of the Sun, measures some four hundred and fifty to five hundred feet along each side of the rectangular base, and about one hundred and thirty-five in height. An important feature of the ancient city—for here must have been in the distant past a city of no mean dimensions—was a great court, some six or seven hundred feet square, lying at the foot of the pyramid of the Moon and opening into the "Pathway of the Dead." The latter is a depressed

way nearly three hundred feet wide, extending southward a distance of two miles or more, and flanked on each side by an almost continuous series of mounds and terraces ranging in height from ten to thirty feet. The ruin known as the Citadel is an inclosure nearly one thousand four hundred feet square, the surrounding embankments varying in width from one hundred to one hundred and eighty feet and in height from ten to twenty. Each of the four embankments is surmounted by four small mounds at regular distances apart. Most of the structures were built of irregular stones and adobe, though hewn stone was used at important points. Fragments of pottery are very abundant, and obsidian flakes and stone axes have been found in considerable numbers. One massive stone idol, which has excited considerable interest, has been found here, and frequently described and figured. A fragment six feet long of another was discovered at the base of a small pyramid in the great court mentioned above. It was here that Charney discovered in the ruins of a building the remains of pillars, a feature almost unique in the ruins attributable to Aztecs, Toltecs, or Mayas.

Who were the founders of Tula and Teotihuacan is a question which has been frequently discussed, generally without reaching a positive conclusion, though usually they have been attributed to some pre-Aztec people. One indication of the age and extent of Teotihuacan is found in the statement of Garcia y Cubas, a member of the commission appointed by the Mexican government to explore the site, regarding the exposure of the foundation of buildings by river floods, and which does not appear to have received the notice that it deserves. "The river," as he states, "empties into Lake Tezcuco, with great freshets in the rainy season, its current becoming at such times impetuous. Its waters have laid bare throughout an immense extent of territory, foundations of buildings and horizontal layers of a very fine mortar as hard as rock, all of which indicates the remains of an immense town."

Teotihuacan is spoken of as a great centre of religious worship and priestly rites, and the remains would seem to justify this conclusion. Bandelier (*Report on Archæological Tour in Mexico, 1881*, 42, 1884) says: "While the name Teotihuacan is Nahuatl, the confused traditions concerning the origin of the ruins ascribe them to a very different tribe," and he adds in a note: "That the Pyramids of Teotihuacan date from a period anterior to that of the Mexicans, or Nahuatl in general, results from the fact that no striking mention is made of them in connection with the specifically Mexican traditions. The place in the two centuries which preceded the conquest does not play a part corresponding to the magnitude of the ruins. This shows that the edifices were already abandoned at the time of the conquest. Besides, those authors who have been, so to say, the 'inventors' of the Toltecs ascribe the mounds of Teotihuacan very clearly to that tribe. . . . Not even the *Annales de Cuauhtitlan*, so far as published, make any mention of the place."

The most convincing evidence that they are not Nahuatlan, at least not Aztecan, is found in the types, especially of the figures. The Mexicans could give names to both places and peoples, which were fixed in the early Spanish works and passed thence into general literature, but the abominable figures born in the imagination of their terror-loving priests tinged their works with markings which could not be misunderstood. There are none of these marks about the remains of the "City of the Gods." Teotihuacan was not Mexican but Toltecan. Who the Toltecs were is a question to be discussed in a future chapter. Sahagun's version of the old tradition may have some elements of truth in it. It is probably as near right in attributing the mounds of Teotihuacan to the Toltecs as will ever be ascertained. However, so much of the tradition as brings this people across the Gulf from some more eastern point must be rejected. But these are questions for subsequent discussion. We would only add here that modern

authors when referring to this people and other ancient tribes of this section have applied the name Nahuatl too generally, failing to properly differentiate tribes and peoples. If the Toltecs were Nahuatlan, they were neither Maya, Totonac, nor Otomi. If they pertained to either of the latter stocks they were not Nahuatlan.

## CHAPTER IX

### *CIVILIZED TRIBES OF ANAHUAC—TOLTECS AND MEXICANS*

In treating of the pre-Columbian times of the tribe over which Montezuma held sway when Cortés descended upon the city of the lakes with his hungry Spaniards and savage allies, we prefer to use the term "Mexicans" in the sense applied to it by modern Spanish writers, as it is not quite so restricted as "Aztec," nor so broad as "Nahuatl." As Mexican tradition and Mexican history agree with all other data that the builders of Tenochtitlan were not the first people to enter the historic valley of Anahuac, inquiry will be directed first to the prior occupants, to whom brief allusion was made at the close of the preceding chapter.

The subject is by no means new, as the Mexicans themselves, after they had become a strong nation, speculated as to who preceded them, who were the first inhabitants of their valley, whence they came, and how they passed away. To all these questions they gave answers largely mythical, filled out by imagination where data were wanting, but withal mingled with items of truth which had floated down the ages.

Bancroft brings together in the fifth volume of his *Native Races of the Pacific States*, under the title "Pre-Toltec Period," the substance of these traditions relating both to the Mexican and Mayan sections. He has, however, mingled together in this summary items relating apparently to pre-Toltec, Toltec, and post-Toltec eras. Nevertheless,

the chronological sequence depends upon the conclusion reached in regard to the reality of the Toltecs as a distinct people and their ethnic relations. If they were the ancestors of or related to the Mayas, as is the most likely conclusion to be reached with our present knowledge regarding them, then what is mentioned in regard to Maya tribes as pre-Toltecan cannot be accepted as correct. As this point must be discussed in the attempt to trace the pre-Aztecan events of southern Mexico, this discussion, though necessarily brief, may be presented here.

It will be admitted at the present day, as the result of the study of the monuments, traditions, and literature relating to the subject, that central southern Mexico, which for convenience may be termed Anahuac, was visited in prehistoric times by successive waves of population. The last and most important of these waves was that of the Aztec or Mexican tribes, who began to build their chief city—Tenochtitlan—in 1325 amid the marshes, the seemingly forbidden locality having been selected by their chief priest, in accordance with an opportune omen. We have in this date, which appears to be established with reasonable certainty, and which preceded the arrival of the Spaniards a little less than two centuries, a basis for the chronology of preceding events. According to the *Codex Ramirez*, the Toltecs abandoned Coatepetl, or "Serpent Hill," the citadel of Tula, Tulan, Tolan, or Tollan, their favorite seat, in 1168, though this event is generally placed in the eleventh century.

The tradition of the Toltec migration as given by the early authorities differs as to the date of their departure from Huehue Tlapallan, an unknown and possibly mythical locality, ranging from the first part of the fourth (Ixtlilxochitl) to the close of the sixth century (Veytia). The most generally accepted date is that adopted by Clavigero; that is, about the middle of the fifth century. As their migration apparently from some northern section, Xalisco (Jalisco) being named as one of their stopping points, occupied about

one hundred years, their arrival at Coatepetl and founding of Tula must be assigned to the sixth century. Although it is true that this entire tradition has been looked upon with considerable doubt by a number of authors, it fills most consistently a blank that must otherwise remain a blank in the ancient history of Mexico; and, more than this, it accounts for tangible monuments which must otherwise remain a mystery, and be attributed, as is usual in such cases, to a vanished cultured race. It also aids, as will appear, in accounting for the early and otherwise unknown history of certain Mayan tribes. Our use of these traditions must therefore be understood simply as presenting the most consistent and probable solution of the difficult problems of early Mexican prehistory.

The terms applied and the character given to the Toltecs clearly indicate that they were a cultured people. Their name was considered equivalent to "artificers" or "builders," and all arts and culture were ascribed to them; and wherever the natives were asked concerning ancient structures whose origin was unknown, the reply would be that the Toltecs had built them. The mystery in this case was much like that which for a long time hung about the mounds and other ancient works of the Mississippi valley and Gulf States. They were ascribed to an unknown and vanished race, until it was shown—especially through the investigations of the Bureau of American Ethnology—that they were the work of the Indians, the direct ancestors of those found inhabiting those regions at the arrival of the white man. Writers, as is too often the case, are unwilling to accept the simplest and most natural solution of the problem.

That the Toltecs were distinct from the Chichimecs, be the latter who they may, is clear from the frequent mention of them as opposed one to the other; and that they were not of the Otomian stock, nor of the Zapotecan or Tarascan families, is admitted. Were they Nahuatlan? This is often asserted, and is perhaps the most generally accepted theory

of the present day. Bancroft (*Native Races*, v, 288) says: "I now come to what may be termed the regular annals of that branch of the Nahua nations which finally established a kingdom in Anahuac with Tollan for a capital, and which acquired the name of Toltec;" and he is not without the support of early authority in this view. Sahagun (*Historia General*) says they used the Mexican language, though not so correctly as others; but a few pages further on in the same work he makes a distinction between the "Tultecas, y los Mexicanos o Nahoas y todos los otros." Ixtlilxochitl (Kingsborough, ix, 345) declares that the Nahuatl group is a mixture of Tulteca with Chichimeca, and connected the latter with the Nahuatl stock. The confusion on this subject among modern authors has arisen, as it seems, not entirely from the imperfect data and the obscurity in which the subject is involved, but from want of proper differentiation and definiteness in referring to tribes and peoples. Bancroft's account of the pre-Toltecs and Toltecs, as given from the tradition in the fifth volume of his *Native Races*, leaves the subject in inextricable confusion by his indefinite application of the term "Nahua" to each of the eras. The evidence that the Toltecs, or people who made Tula or Tollan their capital in the sixth or seventh century, were not Nahuas is found in the most consistent interpretation of the traditions regarding the order in which the various tribes appeared in central Mexico, and in the types of the monuments at Tula and Teotihuacan. "While the name Teotihuacan," says Bandelier, "is Nahuatlan, the confused traditions concerning the origin of the ruins ascribe them to an entirely different tribe. Only one remnant is left of another, older, aboriginal name for the place, in the statement that it was called Tula, or Tulha, Tollan, Tollam, and this name has been explained to signify 'place of reeds,' or 'place of the Toltecs.'" To this statement he adds in a note to the paragraph quoted above, "that the Pyramids of Teotihuacan date from a period anterior to that of the Mexicans, or Nahuatl in general."

That the architectural and sculptured types of Tula and Teotihuacan differ so widely from what are known as Nahuatlan as to exclude the idea that they pertained to the latter has been stated above and will be more explicitly shown in a subsequent chapter. We may add here, however, what will probably be considered an extravagant and unwarranted assertion, to wit, that no well-defined and well-authenticated Mexican or Aztec architectural type based on the monuments is known. The very general habit of writers of alluding to and comparing with the Mexican or Aztec type is due to generalization and neglect to differentiate the types and peoples. The temples and palaces of Tenochtitlan, the capital of the Aztecs and the antecedent of the present City of Mexico, remain only in the descriptions of the Spanish conquerors and the uncertain remains of foundations which have been recently unearthed; not one has remained to modern times to be studied. Statues which seem to have been conceived and planned in a horror-loving imagination, and some supposed calendar and sacrificial stones, are almost the only undoubted prehistoric remains of the ancient city, save the ceramics and artefacts. Unless found elsewhere, there are no architectural remains which present a distinct Aztec or Nahuatl type. The remaining Mexican manuscripts furnish us the types and forms of their symbolic and ornamental figures, and conventional representations of temples and other structures.

The ruins at Xochicalco, "Hill of Flowers," about seventy-five miles southwest of Mexico City, bear figures and ornamentation which, judging by the types in the manuscripts, may be classed as Aztecan. These, including the subterranean excavations, may be briefly described as follows:

In the centre of the plain rises an oval hill, about two miles in circumference, and about three hundred to four hundred feet high. Two tunnels, or galleries, enter the side of the hill on the north, one of which has been traced to a depth of a little over eighty feet. The second, between

nine and ten feet high, pierces the solid limestone of the hill, and has several branches running in different directions, some of them terminating in fallen débris, others apparently walled up intentionally. The floors are paved to a thickness of eighteen inches with brick-shaped blocks of stone, and the sides are strengthened with walls of masonry wherever necessary. Both pavement and walls, as well as the ceiling, are covered with lime cement, which still retains evidence of having been painted with red ochre. The principal gallery, after turning once at right angles, terminates at a distance of several hundred feet in a large apartment about eighty feet long, in which two circular pillars are left of the original rock to serve as supports to the roof. From one corner of the room opens a little rotunda, six feet in diameter, excavated, as the room itself, in the rock, the dome of which is in the form of a pointed arch. The outside of the hill is formed into five successive terraces, supported by walls crowned with parapets. The top or upper level, about two hundred and twenty by two hundred and eighty feet, supported a temple, or more correctly a pyramid and temple, the latter measuring sixty-five feet from east to west and forty-eight from north to south, constructed of porphyritic granite, dressed and laid without mortar. There were originally five stories to the temple, rising step by step one behind another, which were to be seen as late as 1755.

A restoration of this temple was made under the direction of Professor Holmes for the recent Exposition at St. Louis.

The dragon form, rabbit, and other figures with which the exterior is ornamented, are similar to the Mexican types of the manuscripts, and would seem to denote a different tribe or people from the builders of Tula or Teotihuacan; however, the artificial caverns found here have nothing peculiarly Mexican about them, but seem to be more nearly related to customs already referred to as found further north. A feature of this structure deserving of special notice is that the facing of the portion which remains standing is built of large blocks of granite or porphyry, of different sizes, the

largest being about ten or twelve feet long and three feet high, laid without mortar and with scarcely perceptible joints. The sculpture in low relief appears to have been done after the stones were in place.

The pyramid of Cholula, classed by many as Nahuatlan, has been shown by Bandelier to be pre-Aztecan and most likely Toltecan. The only remaining structure, therefore, which can be pointed to as probably Nahuatlan is the temple of Xochicalco; but the more this is studied, the more doubtful does its Nahuatlan origin become. Although the figures resemble the Mexican, there are other features which are more like the Mayan. However, as Bancroft remarks: "It must be remembered that all the grand temples in Anahuac—the Aztec territory proper—have disappeared since the Conquest, so that a comparison of such buildings with that of Xochicalco is impossible. . . . Still there remains, of course, the possibility of a pre-Aztec antiquity for the building on the hill of flowers, and of Maya influence exerted upon its builders." The appeal, therefore, to an Aztec or Mexican architectural type should cease until such a type has been found; for it is as likely true as otherwise that the structure at Xochicalco should, as local tradition declares, be attributed to the Toltecs and to the pre-Aztec era.

Motolinia, an early Spanish writer, describes the construction of Mexican mounds of worship as follows:

> In the most prominent part of this court there stood a great rectangular base, one of which I measured at Tenanyocan in order to write this, and found it to be forty fathoms from corner to corner. This they filled up solid, stuffing it within with stone, clay, adobe, or well-pounded earth, and faced it with a wall of stone; and as it rose they made it incline inward, and at every fathom and a half or two fathoms of height they made a stage. Thus there was a broad foundation, and on it walls narrowing to the top, both by reason of the stages as well as by the slope, until at a height of thirty-four or thirty-five fathoms the teocalli was seven or eight fathoms smaller on each side than below. On the west side were the steps by which to ascend, and on the summit were erected two altars close by the eastern edge, not leaving more space behind them than sufficient for a walk. One of these altars

was on the right, the other on the left, and each one had its walls and roof like a chapel. The large teocalli had two altars, the others one, and each had its covered house. The great ones were of three stories over the altars with their ceilings fairly high. The base also was as high as a great tower, so that it could be seen from afar. Each chapel stood by itself, and one might walk around it, and in front of the altars there was a great open space where they sacrificed.

Although there is considerable confusion among the early authorities in regard to the order in which the tribes appeared in Anahuac, it is evident that the general conclusion is that several people reached this section in advance of the Nahuatl tribes. Payne, who alludes to the confusion and mentions two different series, counts that as the earliest which begins with the Ulmecs, or Olmecs, and Xicalancas. These, omitting from consideration the fabulous giants, or Quinames, are, he thinks, treated by the Paris and Vatican codices as the earliest arrivals. "They are followed by the Huaxtecs, of Maya origin, near Panuco; next come the Totonacs, also on the Atlantic, presumably of southern origin like the Huaxtecs. The Cohuixcans [Colhuicans] and Tarascans on the Pacific side follow in order; the list closes with the Nonohualca, at the south end of the lake of Chalco, who claimed to have preceded the first Nahuatlican settlers and the Chichimeca who settled at Tenayucan and Tezcuco." It will be seen from this statement that this author omits the Toltecs from the list. This arises from the fact that the authority he is following (chiefly Gomara) brings them in apparently as another wave of population, though his theory at this point is not very clear nor his differentiation definite. He appears to count them as a division of the Nahuatlan stock, and the first people of that stock to reach Central America; yet he follows the early authorities in considering them as the introducers of advanced culture as he remarks that "At the conquest, the ruins of Tollan situated in the midst of a district which had long been overrun by the uncivilized Otomi, still bore witness to the high culture of the ancient Toltecs, who had been the originators and maintainers of a true 'golden age'

in Anahuac." (ii, 450). To them, it must be remembered, is attributed by early authorities the formation of the calendar, and the earliest "pinturas," or symbolic manuscripts.

Sahagun, who is considered one of the ablest early authorities, speaks in substance as follows:

The first settlers of New Spain countless years ago, coming in ships from the sea, disembarked at Panutla [Panuco]. From this port they began to follow the coast southward until they reached the province of Guatemala. They came to settle in Tamoanchan, where they remained a long time and never ceased to have their wise men or prophets called *amoxoaque*, that is "men learned in the ancient paintings."—Some of the wise men departed toward the east, leaving only four behind. These invented the magical or astrological arts and the calendar. From Tamoanchan the people went to Teotihuacan, where they built two mounds in honor of the sun and moon, and where they elected their rulers, and buried the lords and princes, ordering the tumuli, which are still to be seen, to be made over their graves. From Teotihuacan they (the Toltecs) settled in Tollan or Tula. (*Genl. Hist.* tom. iii, lib. x.)

This account, of which only the parts relating to migrations have been mentioned, evidently disregards chronological sequence; "pinturas," or paintings, that is to say manuscripts, and the calendar were things developed after the advance in culture had commenced. The movement into Guatemala, which necessitates a return to Tamoanchan and Teotihuacan, is simply an enlargement of the tradition so as to include long subsequent movements into the southern section.

That part implying a passage across the Gulf and a disembarking from vessels at the mouth of the Panuco must be rejected as an addition, made because the first point at which the tradition finds these immigrants was in the vicinity of the mouth of the Panuco. Bandelier, who has traced back this tradition, says that neither of the two earlier versions makes mention of disembarking from vessels

or passage across the sea, but, on the contrary, speak of the Xicalancas, one of the incoming tribes, reaching the coast from the interior. This agrees also with the tradition of the Huastecas—another of the immigrating tribes—as given by Marcelo Alejandre in his *Cartilla Huasteca*, which says that they had their origin in the north, and established their first location on arrival in the southeast, where Altamira of the present day is located, in the State of Tamaulipas.

It is probable, if the tradition given by Sahagun can be accepted after it has been purged of its anachronisms and evident errors, that it applied chiefly to the Toltecs. However, Bancroft (*Native Races* v, 217) carries back the date of this immigration "to a time long prior to the Toltec migration in the fifth or sixth century" and speaks of it as the first appearance of the "Nahua civilizers."

The same author mentions as the nations which are supposed to have preceded the Toltecs: the Quinames (the fabulous giants), the Olmecs, Xicalancas, Totonacs, Huastecas, Mixtecs, Zapotecs, and the Otomi. Of course, the Quinames, or fabulous giants, are excluded from consideration as there is nothing to show that the name designated a real people, though possibly it may be evidence of a dim tradition of wild and savage folk found inhabiting southern Mexico by the first of the incomers of more cultured tribes. Ixtlilxochitl, a native author, places them in the mythical period of Mexican history. Veytia (*Hist. Ant. Mej.*) says they were "more like brutes than rational beings; their food was raw meat of birds and beasts which they hunted indiscriminately, fruits and wild herbs, since they cultivated nothing." However, he adds that they knew how to make pulque with which to make themselves drunk, and that they went entirely naked "with disheveled hair."

The Olmecs and Xicalancas who were counted by Brinton and some other authors as semi-mythical, were generally considered by the early Spanish writers as the first immigrants. The tradition of their landing from the Gulf at

the mouth of the Panuco given by Sahagun has been mentioned. Camargo (*Hist. Tlax. in Nouvelles Annales des Voyages*, tome xcviii) gives their traditional itinerary. He states that in company with the Zacatecas they came from "the Seven Caves"; that parting from the Zacatecas, they came south through the valley of Mexico, passing on to Xochimilco south of Popocatepetl, thence moved northward, and finally settled in what is the Territory of Tlaxcala. Accepting this tradition as probably true in substance, though Bandelier says the route followed is unaccountable except on the theory that certain points were already inhabited, we will give very briefly our theory in regard to the order of succession of the incoming early tribes, as gathered from the most consistent points in the confused statements of the early writers, bearing in mind Berendt's suggestion that the Olmecs may be represented by the modern Chinantecs of Oaxaca.

First we may adopt as a general proposition, though not without exceptions, Payne's conclusion that "all groups speaking languages other than Mexican which are found beyond [south of] the isthmus of Tehuantepec may safely be regarded as aboriginal [prior] relatively to the Nahuatlateca." In other words, we may assume that the tribes south of the Isthmus of Tehuantepec not speaking a Nahuatlan language preceded the Nahuatlan tribes. Although this is probably correct as a general proposition, yet relative geographical position is not absolute proof of the earlier appearance of the more southern tribes, as is evident from the Nahuatlan colonies in Guatemala, Salvador, Nicaragua, and Costa Rica, which must have passed the homes of earlier tribes in reaching their southern localities.

It is probable that the Zapotecs, Mixtecs, and Zoques appeared among the earliest arrivals in the south and southwest, and the Toltecs and Totonacs among the first in the southeast. In regard to the last—the Totonacs—we have another and independent tradition bearing upon the date of their arrival in their historic seat. They were the first natives met by Cortés on landing in Mexico; to whom

they mentioned a tradition that they had resided in Totonicapan, their territory—now in the state of Vera Cruz—for eight hundred years at the time the Spaniards arrived. Most of this time they had, according to their statement, been independent, though a few generations before the coming of the Spaniards they had been made tributary to Montezuma. According to this tradition the course of their early migrations had been from the west and northwest, and they claimed to have been the constructors of the pyramids of Teotihuacan. That they were highly cultured is distinctly testified to by the early Spanish chroniclers, and is proved by the ruins which still exist in the province, and which Dr. J. W. Fewkes is now investigating and finding most interesting. Their linguistic affinity is so far doubtful that they are for the present counted by most philologists an independent stock, the infusion of Maya and Nahuatl words into their language being about equal. Sahagun says they claimed relationship with the Huastecas, who adjoined them on the north, which conclusion has been adopted by Orazco y Berra and later by Leon.

The Huastecas were probably associated with the Totonacs at an early day. The Toltecs, as before mentioned, probably arrived at Tula in the sixth or seventh century, having wandered over the adjoining regions for perhaps a century. If the Toltecs were the ancestors of the Mayas, as is most likely, and is the conclusion toward which the results of the more recent investigations seem to be tending, then it is most likely that the development into tribes took place before they had passed south of the Isthmus of Tehuantepec. It seems necessary also to assume a primary division of the Mayan group into two or three sections while in central Mexico, in order to bring their past history into accord with the known facts and the traditions. From one of these divisions the southern and western tribes—those of Guatemala and western Honduras—descended; from the other were developed the eastern tribes of Chiapas and Yucatan. Possibly the Huastecas broke away from the main body

before any of the other divisions took place. This suggestion seems justified by the wide dialectic variation of the language of this tribe from that of the other tribes of the family; from their isolated geographical position as regards the remaining portion of the stock, and the traditional evidence of their early arrival in this section; and the absence from their culture, so far as known, of the native calendar system in vogue among the other tribes of the group, and the Aztecs, Zapotecs, etc.

The Toltecs or pre-Mayas, as we may term them, were doubtless the authors of the older structures at Tula, and in all probability of the various structures at Teotihuacan, notwithstanding its Nahuatl name. Bandelier also argues that they were the builders of the pyramid of Cholula, and that here the worship of Quetzalcoatl was introduced at an early day. All these events belonged to the pre-Aztecan period. As we shall not discuss further the movements of Mayan tribes until we have noticed to some extent the structures attributed to them, and also the evidences of their advanced culture, we add, before closing the chapter, some remarks regarding the prehistory of Mexico.

In studying the ancient history of Mexico, exclusive of Chiapas and the Yucatec peninsula, there are several items, besides the traditional and historical, that come to our aid and assist in solving some of the numerous problems which arise, or throw some light on them. The physical characteristics of the country are such that the chief lines of migration, whether north or south, would be along the coast regions. If from the north, the Rio Grande valley would form a pathway into northern central Mexico, and the narrowing width between coasts would, where the movement was southward, bring into closer relation the migrating tribes. Theoretically, if the population were considerable, the natural result would be that the vicinity of the Isthmus of Tehuantepec would be the scene of conflicts. And the history, so far as is known, corresponds with the theoretic conclusion.

There is, however, one difference between the theory and the facts so far as they can be ascertained. While the Pacific side is marked by monumental remains from Arizona to Guatemala, and the traditions of nearly all the tribes corroborate these monumental indications, and language serves to confirm them, on the other hand all such evidence is wanting on the Gulf side north of Panuco River. In fact, so entirely negative was the evidence in relation to the past of this eastern coast that the early Spanish writers, who were disposed to derive immigrants from Florida, brought them across the Gulf; moreover, Texas and northeastern Mexico are almost wholly without monumental evidence of former population. In other words, there is nothing on the eastern side indicating a line of prehistoric migration to or from the valley of the Mississippi. This fact agrees with and tends to the support of the theory that population first appeared on the Pacific side. However, it is true that the northern central and northeastern portions of Mexico were occupied at an early date by a number of savage, uncultured tribes, such as the Otomi, the so-called Chichimecas, and others. It is more than probable that most of the tribes included under the indefinite term Chichimecas belonged to the Nahuatlan stock, especially those inhabiting, in part, the sections now known as Zacatecas, Aguas Calientes, and San Luis Potosi, and that these were the first of this group to enter this southern section.

The nations which, so far as known, formed the chief factors in the prehistoric era of Mexico were the Toltecs, the Otomi, and the Aztec or Mexican division of the Nahuatlan family. The first of these to hold sway in the central and southern sections were, as already mentioned, the Toltecs, who maintained supremacy until the eleventh or twelfth century, when they were driven out by incoming hordes and forced southward, to be known afterward as Mayas. However, as will appear later, there is evidence that kindred tribes had at a much earlier date occupied this more southern section.

But little is known, traditionally or otherwise, in regard to the early history of the Otomi, although it is probable that they reached central Mexico with the earliest immigrants; in fact, according to an Aztec tradition, they were the first occupants of the soil of central Mexico. Nor can there be any doubt that people of this stock penetrated to the interior of Anahuac and founded the first pueblos of this region. Xaltocan in the north and Xochimilco in the south were regarded as of Otomi foundation; Mixcohuac was named from the Otomi deity Mixcohuatl; Tezcuco was notoriously of Otomi origin, although the inhabitants had, at the conquest, long adopted the arts and customs of the Mexicans; nevertheless, the Otomi language was still in use there. The name Otumpan (Otompan) indicates that this pueblo was also of Otomi origin, as it signifies "place of the Otomi."

Although the Otomi appear by their monosyllabic language and some other peculiarities to be isolated ethnically, that is more distinctly separated as a stock from other groups than usual, they seem to have included all the stages of culture known to aboriginal Mexico. The assertion by some of the early as well as modern authors that the Otomi were wild, rude savages relying upon the chase and wild fruits for subsistence, and far inferior to the Nahuas, will not apply to them generally. The portion of the group which penetrated into Anahuac, probably pushing before them the last of the Toltecs, seem to have learned from the latter some of the arts and customs of higher culture. Agriculture was adopted as a means of obtaining subsistence; and from the cotton raised their women wove clothing for both sexes. Ornaments of gold and copper and hard stones were in use, and their religious observances were conducted with ceremony; and according to Brinton (*Ancient Nahuatl Poetry*) they were famous for their songs and musical ability.

This advance in culture, however, was not coextensive with the stock as a large portion of the group remained in a state of savagery until converted by Spanish priests. In

fact, the northern and western portions of the group were included by early writers under the name "Chichimecas," where used to indicate savages. It must be remembered, however, that this much abused term was used by such writers as Ixtilxochitl to include some of the most cultured people of central Mexico, and with the prefix Teo (Teochichimeca) was applied to the ancestors of the Tlascaltecs, though Torquemada (*Monarq. Indiana*) says they were Otomi; however, both statements may be correct. The tradition is that they, like other tribes of central Mexico, came from Chicomoztoc, or "Seven Caves," by way of Xalisco (Jalisco) Tollan and the Lakes; that is, in a general direction from west to east, seeking "the Land by the Water where the Sun rises." They halted for a time near Tezcuco, already a flourishing pueblo. Their rapid increase brought upon them the enmity of the neighboring pueblos, which resulted in their being forced to migrate further toward the east, finally settling in the mountain-environed area known as Tlaxcala, hence their name Tlascaltecs.

For the two centuries preceding the appearance of the Spaniards on the scene, the history of central Mexico was chiefly the history of the Aztecs or Mexicans, who, as before stated, had fixed their capital in the border of one of the lakes of Anahuac valley in 1325. From a band of warriors, according to the generally received tradition, they, like Rome of the Old World, rapidly rose to power and influence, so that, at the arrival of the Spaniards, their city of the lake, the seat of authority, held sway over central Mexico, the Pacific coast region from Sinaloa to Oaxaca, and the Gulf coast from northern Vera Cruz to Tabasco.

The prehistoric movements and development of this tribe, as given in their "pinturas" and tradition, are, notwithstanding the numerous works which have been devoted to the subject from the days of Cortés to the present, unsatisfactory and confused. Writers, especially modern authors, in their neglect properly to apply names and the desire to generalize, have included under the name "Aztec" several different, though

affiliated Nahuatlan tribes. The term "Mexicano," as used by the later Spanish writers, which includes more than the one tribe, is the better name where it is desirable to generalize. The Acolhuas, a pre-Aztecan people, were probably of Nahuatlan origin, though largely mixed with Toltecan and possibly Otomi elements. The Tezcucans were Nahuatlan, as were the people of the so-called Tepanec pueblos, as Azcapozalco, Tlacopan, etc. Gomara attributed the latter to a separate Nahuatlan migration. Besides these tribes of the valley there were the Cuitlateco of Guerrero, and the Meztitlateca of the Meztitlan sierra along the northern border of the valley of Mexico.

It was long after these were established in their known localities, after Tezcuco had acquired a dominant position on the northeastern shore of the lake, and the Tepanec confederacy had gained sway over the southwestern section, that the Aztecs appeared on the scene. Being affiliated with the occupants they were allowed to settle in the same locality—a rude band of wanderers destined to overshadow and swallow up those who had so kindly granted them a home.

The Aztec migration chart given by Gemelli Carreri and others, so far as interpreted, relates to movements in or in the vicinity of the valley of Mexico. Hubert Bancroft, who does not accept the idea of a general migration from the northwest, yet influenced by the almost universal testimony of the early Spanish writers, says it is probable that the tradition which brings the Aztecs in this direction alludes to their last movement from some point immediately north of the valley of Mexico. As this would have brought them from the Otomi country it is more likely that they came from some point more to the west. Their migration chart indicates wanderings here and there without any definite point in view; and the Tepanecs called them Azteca, or "Crane People," a name probably descriptive of their wandering life, or their habit of wading in the marshes. "No credit whatever," says Payne, "can be given to the prolix and contradictory stories current among them, in

later times, of the causes and circumstances of their migrations before they reached the Valley of Mexico" (*Hist. Amer.*, ii, 509–510). Nevertheless, he admits immediately after the passage quoted that there are elements of truth in regard to the general movement of the Nahuatlan tribes from the northwest and uses it to the full extent.

Our limits will not permit us to enter fully upon the pre-Columbian history of the Aztecs (or Mexicans) as preserved in their traditions and the interpreted codices and paintings. It was probably among this people that native organized government had reached its most advanced stage, which may, perhaps, without exaggeration be termed a well regulated monarchy. Descent was in the male line, the title passing from father to son subject, however, to certain limitations, as it seems that certain nobles, or men of authority had the right to determine which of the two or more sons, or nephews when there was no son, should succeed to the sovereignty. That is to say the government was to this extent an elective monarchy, the election being restricted to the males of the family, or direct line of the deceased monarch, females being ineligible.

Agriculture was carried on as thoroughly among the Mexicans as by any other people of the continent. Cotton was largely employed for clothing, being neatly woven and dyed in brilliant colors. In the use of metals and the manufacture of pottery they appear to have ranked with the most advanced of the so-called civilized nations; though in architecture, as hitherto intimated, they were inferior to the Maya tribes and Zapotecs. They had adopted the so-called "Native Calendar," applying, however, their own peculiar terms and symbols. Their pre-Columbian manuscripts, which are chiefly concerned with their calendar and religious observances, while more elaborately colored than the Maya are inferior to the latter in the advance made toward true hieroglyphic representation. Their inscriptions, found chiefly on certain ceremonial stones, are few and far inferior in character to those of the ancient Mayas.

Their religious rites were elaborate and even burdensome, priestcraft in reality holding and directing the helm of power. The great blot, however, on Aztec civilization was the custom of offering human sacrifices to their gods. Although this practice prevailed to some extent in other Mexican and Central American tribes, this horrid cult reached no such proportions elsewhere as in Tenochtitlan. If we accept the statements of the earliest Spanish authors, it had been carried to actual cannibalism, the human sacrifices being largely for the purpose of furnishing human flesh for consumption. Bernal Diaz, who was with Cortés, tells us that it was even exposed in the shambles and sold as other articles.

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Aztec calendar Stone. *From the original in the Museo Nacional, City of Mexico.*

## CHAPTER X

### *MAYA ARCHITECTURE AND MAYA RUINS*

PASSING into the Maya section embraced in Chiapas, Campeche, Yucatan, Guatemala, and western Honduras, we enter the region of the most advanced native culture of America, even that of Peru forming no exception to the statement. Although the architectural remains form but one line of evidence of this culture, that evidence is both important and convincing, especially when carefully studied. In considering this branch of the subject, however, we find the unusual condition in archæological investigations of a redundancy of data forcing us, in our necessarily brief survey, to select only such examples as may serve as types of the various sections.

The art in which the Mayas excelled was that of architecture, and a modern author has well remarked that "they were born builders from a remote epoch." In fact, we shall find that they come suddenly before us in their historic seats as builders. Although the names and locations of the principal tribes are given in Volume II of this series (p. 17), it is necessary to allude here to them, as the location of the several tribes at the advent of the Spaniards may assist in determining the authors of particular structures found now in ruins. Omitting the Huastecas, who have already been referred to, the names and localities of the principal tribes are as follows:

Cakchikel, Kiche, and Pokomam, in southern Guatemala.

Chol, in eastern Chiapas and northern Guatemala.

Motozintleca, in eastern Chiapas.

Chorti, in the valley of Rio Motagua, eastern Guatemala, and in western Honduras.

Ixil and Pokonchi, in central Guatemala.

Chontal, in eastern Tabasco.

Kekchi, on Rio Cahabon, Guatemala.

Mam, in western Guatemala.

Maya proper, including the Itzas (of Peten), in Yucatan, Campeche, and northern Guatemala.

Tzental, in Tabasco and Chiapas.

Tzotzil, in northern Chiapas.

This list indicates substantially the location of the chief tribes of this stock at the arrival of the Spaniards. Their relative importance varied, however, at different eras.

The ruins are indicative of prehistoric occupancy, and are found scattered over the greater portion of Guatemala, Chiapas, Yucatan, and eastern Tabasco and certain points in Honduras along the western border. They occur, however, in greater numbers in certain districts than elsewhere, as in central Guatemala, northern Yucatan, and Chiapas.

The dwellings of the common people were no doubt of perishable materials,—wooden huts covered with grass or palm leaves,—as found in modern times; the ruins, however, are those of stone structures, or earth and stone, as pyramids, artificial terraces, and temple-form and other structures built for religious and ceremonial purposes, or for defence, and in some cases possibly to serve as the homes of the highest spiritual and other dignitaries. At least, this is the opinion expressed by Carl Sapper, one of the most recent explorers of this region. There is no doubt, however, that they were mainly constructed for religious uses. This is evident from the frequent statements made by the Spanish conquerors and early chroniclers, who were frequent witnesses of the strange rites practised in similar buildings in all parts of the country. Another evidence of this use is manifested by the description, which shows that they were of such form and arrangement

as to render them unfitted for dwellings, but especially adapted to native religious observances. Their ornamentation also accords with this view.

There is a similarity in some respects in these structures so persistent as to form a comprehensive type. Usually, in fact, with very few exceptions, they are rectangular, varying from very long and narrow forms to square examples. The rooms are in the form of halls, or are at least rectangular, but never of great width. The triangular arch, formed by gradually narrowing to the capstone, prevails throughout, the circular being unknown to the builders. The buildings were seldom large; the Palace group at Palenque, some two hundred feet by two hundred and twenty-five, and Casa del Gobernador at Uxmal, three hundred and twenty-five feet long by forty in width, being two of the largest examples known. Another very common feature, though it cannot be considered strictly typical, is the pyramidal substructure. Most of the buildings were placed on pyramids, terraces, or platforms, very few being placed on the original surface of the ground.

Notwithstanding the general similarity of Maya structures in these respects, Sapper finds minor differences which he thinks justify classification into several types. In the "Comprehensive Remarks and Conclusions" in his *Nordliche Mittel-Amerika*, he expresses his opinion on this point as follows:

"The old Indian edifices of northern Central America display in various parts of this territory an unusally great variety both as regards the disposition and the construction of the single buildings. Upon closer investigation we find, however, that the structures of special districts show certain peculiarities which are common to all of them, but are not found in the structures of adjoining districts. These common peculiarities, however, apply only to general features, whilst we never meet with slavish imitation of a definite style of architecture. On the contrary, even within the boundary lines of a certain style there exists still an almost

infinite variety of disposition and outward formation among the Central American structures. As the edifices in the neighborhood of a style of building often already show hints suggested by the peculiarities of a neighboring style, we may conclude from this that the Indians maintained among themselves a lively intercourse and possessed a great capacity for acquiring knowledge and taste from their neighbors. Everywhere we find the fundamental idea of walls and terraced pyramids, but in their erection many varieties of style at once appear. Unfortunately, I must here limit myself to the structures on the highlands of Guatemala and Chiapas, and to those of East Guatemala, Peten, Tabasco, and Yucatan."—(*Indian Settlements in Central America*, 552.)

He then gives the following classification into types and varieties, and presents a corresponding map:

"I. The steps of the pyramids and walls are ascending sloping. The buildings are not distinctly grouped around courtyards (squares).

"1. Chiapas style: The buildings of a settlement are rather irregularly arranged.

"2. Motozintla style: The buildings of a settlement show a tendency to face a certain direction. In front of many tumuli, tile pavements are made.

"II. The steps of the pyramids and walls are perpendicularly ascending. The buildings of a settlement face one decided direction. The larger settlements show a part of their buildings arranged entirely or in part around an inclosed courtyard or square.

"A. Verapaz style.—The settlements are mostly small. The buildings face the four cardinal points. Mortar was but imperfectly used. In Chacujal, stone buildings with perpendicular walls, parapets on the platform.

"B. Architectural styles of the highland tribes.—The settlements show a crowded disposition of the buildings. In the whole district temple courts shaped like H make their appearance.

"(a) No mortar is used in the buildings.

"1. Tzental style: The buildings of a settlement are not arranged so as to face the cardinal points, but preferably intermediate directions.

"(b) In many buildings mortar is used in erecting stone houses.

"2. Mam style: The buildings of a settlement are generally made to face intermediate directions.

"3. Kiche style: The buildings of a settlement face the cardinal points.

"C. Architectural styles of the lowland tribes.—In many buildings stone walls, cemented with mortar, are found. Stone houses with habitable inner rooms. The buildings mostly face the cardinal points.

"1. Maya style: At times steep pyramids. The door beams made of zapote wood.

"1a. Peten style: The buildings of a settlement are closely crowded. The formation of any courts (squares) rarely possible.

"1b. Type of South Yucatan: Transition type. The arrangement of the buildings is less crowded. The walls of the stone houses are often incased in stone, carefully cut, but simple.

"1c. Type of North Yucatan: The arrangement of the buildings is rather a scattered one. The outer walls of the stone houses are often richly adorned with sculptures.

"2. Chol style: The door openings are generally closed above with level slabs of stone. The ornamentation of stone houses consists in stucco ornaments or in tablets containing images or hieroglyphics.

"Chorti style: Very peculiar development of the pyramidal structures and of courts (squares). In Copan a steep pyramid."

A brief study of this classification will soon convince the reader that there are not sufficient distinctive marks to render it practically useful. In fact, Sapper, though competent as an explorer was not qualified in certain respects to seize upon the most important distinctions for such

classification. The style of ornamentation, the presence or absence of monoliths, the roof forms, and other distinguishing features are wholly omitted.

Authors have very generally accepted the theory that the oldest Maya structures are those of eastern Chiapas and the valley of Usumacinta River, as Palenque, Piedras Negras, Yaxchilan, etc. This opinion is probably correct though it does not necessarily follow that they have been the longest in ruins. In other words, though we are likely to find the oldest ruins among the oldest structures, favorable positions and freedom from attack may have permitted them to remain occupied long after much more recent pueblos had been abandoned and had fallen into ruins. If this theory and the theory that the Mayas moved to their historic seats from a more northern section be correct—and they are the most acceptable which have been presented—then it is likely that the ruins at Comalcalco, in eastern Tabasco, are among the most ancient Maya monuments so far discovered.

This group of ruins, according to Charney, consists of a large irregular mound, or pyramid, and superimposed works. The latter include two quadrangular towers, a long structure divided into two lines of rooms, and two heaps or small mounds, consisting of the débris of buildings of some character. All, however, are in such a ruinous condition that it is difficult, in fact, almost impossible to make out the plans with certainty. The so-called "palace," of which but a small portion retains the roof, shows the triangular or inverted V-shaped ceiling, the sloping frieze and slightly sloping roof and substantially the mode of structure seen at Palenque.

From Charney's description we quote the following items:

"The walls of the palace were without any ornamentation, save a layer of smooth painted cement; they rose perpendicularly nine feet to a very projecting cornice, then sloping in a line parallel to the corbel vault, they terminated in a second cornice less salient than the first, both

serving as a frame to a frieze richly decorated, so far at least as could be ascertained from the fragments strewing the ground. Above this, toward the center of the roof, rose a decorated wall. . . . The building, including the walls, measures (in width) some twenty-six feet, the walls are three feet nine inches in thickness, the size of the apartments is about eight feet. The palace was brightly painted, as may yet be seen in the north corner, which is of deep red." He says that the ornamentation of one of the towers, of which portions of the wall are yet standing, "must have been gigantic; the fragment (of which he gives a figure) which was found among a heap of rubbish is no less than six feet. The figures or characters on the wall are over three feet high and in strong relief." His description leaves the reader in doubt as to the material used and composition; however, it seems to have been in part or largely adobe, as he mentions "the wall and its brick and mortar composition," and remarks, "If baked bricks mixed with thick layers of lime and mortar were substituted for stones, it is because none are to be found in that alluvial plain." Stairways are a feature not to be omitted in studying these remains.

Facing this pyramid to the north, says the author quoted, hidden by the luxuriant vegetation of a virgin forest, are three other pyramids all crowned with temples, the walls of which are standing. In one of these he was enabled to ascertain the sizes of some of the brick used. These varied from 6 x 9 x 1 to 16 x 11 x 1, some used for the corners measuring 23 x 20 x 14 inches. Numerous other ruins in the same locality, of which no description is given, are mentioned. The writer quoted believes that some of these structures were inhabited at the advent of the Spaniards; but a more complete and detailed description and a thorough search of the early authorities are necessary before attempting to decide this question. It is clear that these ruins must be placed in the same category, as to age, as those at Palenque and those in the valley of the Usumacinta.

The ruins at Palenque in eastern Chiapas, which have been so often described and figured, are among the most important of the Mayan monuments, and may be taken as the representative of a common type in the Usumacinta valley.

These ruins consist of a number of pyramids crowned with remains of buildings, supposed to have been used chiefly as temples where native worship and religious ceremonies were performed. The largest of these structures, has, however been generally known and referred to as "The Palace," from the erroneous supposition of the early visitants that it was a royal residence. This group, although so designated is rather a connected series of buildings than a single structure. It is surrounded on three sides by a narrow building consisting of two series of rooms or halls separated by a division wall. This and the included structures stand on a pyramidal substructure or elevated platform some twenty or thirty feet in height (according to the point at which the measure is taken), and measuring at the top two hundred feet from east to west, and two hundred and twenty-five from north to south. The somewhat lower terrace occupied by the building at the south end is about forty feet wide and one hundred and eighty feet long. The compound structure on this pyramid or platform consists, as before stated, of a narrow building around three sides; several included buildings; and some two or three open courts depressed some five or six feet below the level on which the buildings around them stand. Near the centre is a tower originally four stories high.

All the buildings on the pyramid, except that on the lower level at the south end, the tower and the small building immediately south of it, are double vaulted, with the sharp triangular or inverted V-shaped ceiling. The lateral walls are about three feet thick, and rise vertically ten or eleven feet, where the arch of the ceiling begins; from this point, each successive layer of stone projects a little further inward than the preceding one, until, approaching from both sides,

the walls meet at the top, where a single stone suffices to close the opening; the whole being held in position by the superincumbent roof masonry. The height of this arch is nearly or quite equal to the height of the side walls. The upper wall or entablature zone of the Palenque buildings usually inclines inward, conforming more or less closely with the slope of the arch within, differing in this respect from the walls in most of the Yucatec buildings, which continue perpendicular on the exterior to the top of the roof. The roof of the Palenque buildings is generally crowned with an elevated comb, the sloping sides of which are filled with elaborate designs in stucco.

Large slabs of stone are used in the construction of wall openings and the projecting portions of the roof. The outer wall of the surrounding building, that facing the great court on the east, and both outer walls of the interior building are broken into rather broad, square pillars. The whole front, or east face, was covered with stucco and painted; and the piers were ornamented with figures in bas-relief. Broad flights of steps lead up from the main court to the buildings surrounding it. "On each side," says Stephens, who saw them when less worn than at present, "are grim and gigantic figures carved on stone in *basso-relievo*, nine or ten feet high and slightly inclined backward from the end of the steps to the floor of the corridor."

A singular feature of some of the buildings here is the roof-comb. This, which runs lengthwise along the crest of the roof, is yet standing almost complete over the Temple of the Sun, and is in the form of an inverted V, two feet wide within at the base and twelve feet high. Its walls, which are three feet thick at the bottom, thinning out to two feet at the top, are perforated in a varied and striking manner, finishing at the top with a slight moulding; they are built of rather small stones, set in mortar. The faces and ends of this strange architectural device are entirely covered with bold mythological designs in stucco, apparently for no other purpose than to display these figures.

The chief buildings at this point are known as the Palace, Temple of the Sun, Temple of the Cross, Temple of the Foliated Cross (or Cross No. 2), Temple of the Beau Relief, and Temple of Inscriptions. The plans of all, except the Palace, which has been described, are of one type, the simplest form being a two-room building, with a side entrance to the outer room, and passage through the middle wall to the inner closed, dark room, on the back of which is an inscribed tablet, or figure in stucco, which could only have been seen and read by torchlight. Others vary in having two or more openings to the outer room, and the rear half divided into one large central and two small side rooms. Sometimes the central room has another inclosed room or vault within it, at the back of which is the inscribed tablet when present. The stones used in building, where exposed, are well dressed and well fitted in position. The chief defect in the structures was the introduction of wooden lintels. The builders of Palenque appear to have been remarkable stucco workers. The numerous square pillars, as well as many of the wall spaces of the Palace, are covered with it; it is used in some of the temples for inscriptions instead of stone; and the beautiful design in stucco, given by Waldeck, is the finest known specimen of native American art.

Although the architectural remains furnish ample evidence of advanced culture, the most decisive proof of the extent to which this advance had been carried is shown in the hieroglyphs found in these ruins. In Palenque these inscriptions are mostly on flat stone tablets set in the back wall of the inner rooms of the temples, except those of the Temple of Inscriptions, where there is no interior tablet; here they are on the stuccoed walls at each side of the door of the sanctuary. As these will be discussed in a future chapter, it is necessary to add here only that the characters of which they are formed are radically distinct from the symbols of the Mexican codices and the few known Mexican inscriptions. The chief inscriptions of this place are those of the Temple of the Cross, of which one slab is in the

Smithsonian Institute; of the Temple of the Foliated Cross (or Cross No. 2); of the Temple of the Sun; and of the Temple of Inscriptions. They are usually designated by the name of the temple in which they are found.

The history of the city of which these ruins are the crumbling remains, which must have been one of importance and at some period one of influence and power, is hidden in the gloom of the past, seemingly beyond the possibility of recovery: a gloom relieved only by a few faint rays from dim and scarcely intelligible traditions, unless the city should be identified with the Teoticcac or Izancanac visited by Cortés on his march to Honduras, a conclusion which has been discountenanced up to the present time by most historians and antiquaries; nevertheless, a conclusion which the data obtained year by year seem to strengthen. As we are inclined to the belief that Palenque was the Teoticcac of Cortés's journey, notwithstanding the contrary opinion generally entertained, we will give briefly our reasons for this belief.

It is admitted by all writers who have discussed the subject, as Brinton, Charney, Valentini, and others, that Cortés on this celebrated march passed within forty miles or less of this place. By this they must mean forty miles north or east, for, had he passed south or west, he would most certainly have seen more than one of the pueblos whose ruins have been discovered in this section by Charney, Maler, and other explorers. If his passage was to the northeast and his route the most direct to Lake Peten, where are we to find the remains of Teoticcac or Izancanac? The country in this section of the Usumacinta valley has been too thoroughly explored by antiquaries, lumbermen, and others, for the remains of the city and temples described by Cortés and Bernal Diaz to lie still undiscovered. Teobert Maler, who has made this section a special study for several years, has taken up this subject and battled almost single-handed for this opinion; but because some leading authorities had expressed a contrary

opinion and started the current in a different channel, his evidence and arguments have received but little attention.

While Cortés was resting his men at Tisatepetitlan, which Maler identifies locally with the modern village of Tepetitlan on the left bank of Tulija River, the chief of that village informed him that a much larger pueblo could be found not far away, where he would find much better lodgings and more resources if he would go there. "Following this advice," says Maler (*Revue d'Ethnographie*, July and August, 1884, 321–334), "Cortés left Tisatepetitlan, and took up his march to the southeast, to reach this large city which had been recommended to him, and which we will soon show was no other than the celebrated Palenque." On his march across the solitude of the forest in search of this city, he caused the execution of Quetomotzin and other Mexican princes, an act which indelibly fixed on his fame the darkest spot in his career.

"The name," says Maler, "where this shameful crime was committed has come down to the present day; they designate it by the name 'Paso de la Cruz,' on account of a large cross of wood which was erected on the spot. . . . The cross has long since disappeared, but the name still clings to the place. This point is about twenty kilometers to the east of the actual Tepetitlan or between the rancheria Los Cerrillos and the village of La Playa de Catasaja, . . . It can in no way be doubted that the city at which Cortés arrived was the Palenque of modern maps. . . . He calls the city where he established his quarters Teoticcac." The name, which includes *teotl*, "God," is indicative of temples and a religious centre, and this corresponds with Cortés's description in his fifth letter to Charles V., dated September 3, 1526.

> It is a very beautiful village; it is called Teoticcac; and has fine temples, especially two in which we lodged, and from which we cast out the idols, for which they do not show regret, for I had already spoken to them of it and had shown them the error in which they rested and that there was but one God, creator of all things, and all that I

could communicate to them concerning this matter, notwithstanding which, I have still later spoken more fully to the principal lord and to all together. I learned of them that one of these two houses or temples, which was the most important, was sacred to a goddess, in whom they placed much confidence and hope, and that they sacrificed to her only young and beautiful maidens, if they were not such then she would be very angry with them, and for this reason they always took great care to seek them, that she might be satisfied, and they brought up from infancy, those who were of good appearance, to serve this purpose. In regard to this wickedness and cruelty, in which the devil holds them ensnared and deceived, I have told them all that seemed suitable to me, which seemed to content them somewhat.

It is necessary only to go over Stephens's description and figures and compare them with those of the other ruins discovered in the Usumacinta valley to be convinced that this description can apply to no other place than Palenque. Bernal Diaz, who was with Cortés, makes the following mention of this place:

At night we arrived at a village which was abandoned by the inhabitants, but on searching we found eight priests who readily attended us to Cortés. He desired them to call back their neighbours, and that they should receive no injury. This the priests readily promised requesting at the same time, that their idols which were in a temple adjoining the building wherein were the quarters of Cortés, should not be touched; which the general agreed to, but took the opportunity of expostulating with them upon the absurdity of venerating what was in reality no more than clay and timber. The priests seemed very willing to embrace the true doctrine, and brought us twenty loads of fowls and maiz.—(*True History of the Conquest of Mexico*, Keating's translation, 406, 1800.)

Maler thinks that Izancanac was probably where there is a small group of ruins on the left bank of the Usumacinta, directly east of Palenque, known as Canizan. Nevertheless, he thinks it possible that it was one of the larger pueblos further up.

The strong point in Maler's position, and one which has been strengthened by the explorations of recent years, is that Palenque will fit the description and that the opposing theory can give no answer to the inquiry, If not Palenque,

where are the remains of the great city at which Cortés lodged, and which he describes in his letter to the Emperor Charles V.?

We have called attention to this subject because of its importance; for if Palenque was inhabited when Cortés passed through the region on his way to Honduras, many of the theories regarding its great antiquity will fall to the ground. I may add that it is worthy of notice that Diaz, in the second paragraph following that quoted, speaking of the next point reached, calls the natives "Lazandones," evidently the Lacandones, who have occupied the middle Usumacinta region from time immemorial.

The Tzental tradition regarding Votan, their culture hero, and some items in the Kiche legends as given in the Popul Vuh, are all that have come down to the present regarding the city's pre-Columbian history. According to the former, Votan, coming from the eastern coast with a few followers, all clothed in long gowns, made his way, presumably up the Usumacinta, to the home of the Tzental tribe, where they were kindly received. Wives were given to his followers, and he, because of his superior intelligence, was made ruler over the people, who up to that time had lived in a savage state, knowing nothing of agriculture or architecture. According to the tradition, he instructed them in these arts, formed their calendar, taught them the hieroglyphic writing, and built the city of Nachan, "City of Serpents," which Ordoñez decides was identical with the group of ruins now known as Palenque (which must not, however, be confused with the modern village of Santa Domingo de Palenque, a few leagues to the east of the ruins). Xibalba of the Kiche legends, in regard to which many remarkable stories are recorded, has also been identified by some writers with the same city. While this is possible and not improbable, we have no means of confirming it nor of disproving it.

Although it is evident from the extent and character of the ruins that the place was one of influence and importance in the past, yet it would seem that Charney is correct in

considering it a holy place, a religious centre, a city of temples; that it was to the inhabitants of that region what Lassa is to Thibet.

"This important city is apparently without civic architecture; no public buildings are found; there seems to have been nothing but temples and tombs. Consequently, the great edifice was not a royal palace, but rather a priestly habitation, a magnificent convent occupied by the higher clergy of this holy center, as the reliefs everywhere attest.

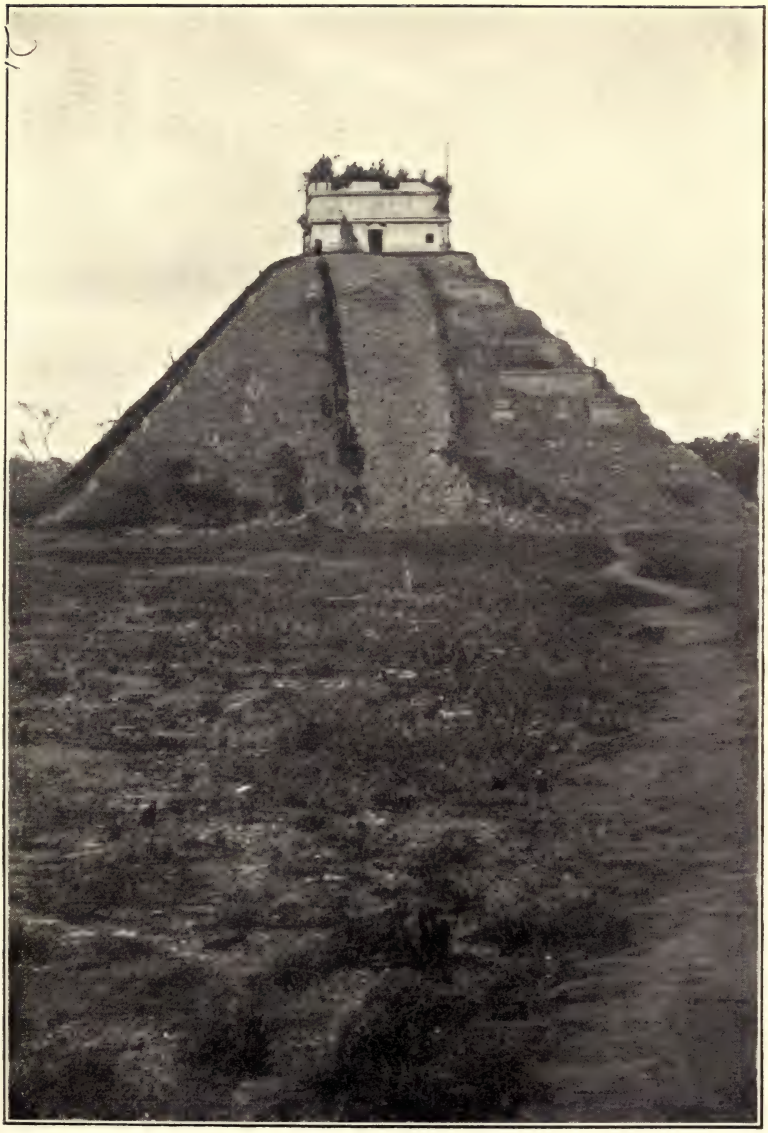
"Had Palenque been the capital of an empire, the palace a kingly mansion, the history of her people, fragments of domestic life, pageants, recitals of battles and conquests would be found among the reliefs which everywhere cover her edifices, as in Mexico, at Chichen-Itza, and other cities in Yucatan; whereas, the reliefs in Palenque show nothing of the kind. On them we behold peaceful, stately subjects, usually a personage standing with a scepter, sometimes a calm, majestic figure whose mouth emits a flame, emblem of speech and oratory. They are surrounded by prostrated acolytes, whose bearing is neither that of slaves nor of captives; for the expression of their countenance, if submissive, is open and serene, and their peaceful attitude indicates worshipers and believers; no arms are found among these multitudes, nor spear, nor shield, nor bow, nor arrow, nothing but preachers and devotees."—(*Ancient Cities of the New World.*)

Passing up the Usumacinta valley along the bordering regions of Chiapas and Guatemala, we find a number of ruins similar in most respects to those of Palenque, some of which indicate pueblos which must have been almost if not quite as important as that ancient city. Piedras Negras, located on the right bank of the Usumacinta a short distance above Tenosique, just within the Guatemalan border, is one of these important groups. We learn from Teobert Maler's explorations (*Memoirs Peabody Museum, ii, part i, 1901*) that he found here the remains of some ten or eleven temples, or structures so called because of their supposed

use as places of religious worship. Most of these were located on pyramids, were rectangular in form, with the triangular arched ceiling where the roofing remained, and of similar construction to those at Palenque.

Here, however, appear some additional items of great interest to the archæologist. The lintels, so far as they are noted by Maler, are of stone and inscribed with glyphs and elaborately ornamented human figures. The most important additions consist of true carved stelæ. Maler informs us that he discovered here no fewer than thirty-seven of these monuments, some of them still standing in place on the pyramidal platforms in front of the temples. Others were lying by the places where they had formerly stood, while others had rolled down the steps to the foot of the pyramid. These appear to have been rectangular—that is, showed a rectangular cross-section—a back and front face, with narrower sides. Each presented an elaborately decorated human figure, usually in low, although in some instances in rather high relief, on one or more of the faces, accompanied by a hieroglyphic inscription. Before some of these monoliths were circular or rectangular stone altars or great cut stones so called.

The presence of these stelæ and altars, as will be seen when reference is made to the monuments of Copan and Quirigua, bring the ruins of the Usumacinta valley into close relation with the latter. Their absence from Palenque, so near at hand and so similar in other respects, is remarkable. Cortés remarks in his letter to Charles the Fifth that he cast out the idols at Teoticcac. This is contradicted by Diaz, the more reliable authority, who says that the priests requested that Cortés should not touch their idols, which were in a temple adjoining the building wherein they lodged, which he agreed to. However, but one or two stone images have as yet been discovered at Palenque, those described in *Antigüedades Mexicanas* as reliefs from Chiapas, being undoubtedly unauthentic; moreover, it is apparent from the space on the pyramids outside of the temples that it was in



Pyramid and so-called Castle, at Chichen Itza, Yucatan.

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no case occupied by stelæ. Nor have any single-stone altars been found there. Yet the glyphs at Piedras Negras, Yaxchilan, and other points in the Usumacinta valley are similar in form to those at Palenque; and the inscriptions have similar initial series. This point will be referred to again after other groups of ruins have been noticed.

A few miles up the river from Piedras Negras, on the left bank, and hence in Chiapas, is the group of ruins known as Yaxchilan, Menche, or Lorillard City, for all these names have been applied by different explorers. It has been examined by Charney, Maudslay, and Maler, and from their descriptions, photographs, and casts it is apparent that it was one of the most important ancient cities of the Usumacinta region. Charney gives the number of buildings in reasonable preservation as twelve, but Maler's discoveries have added another entire quarter to the pueblo, doubling this number. In addition to pyramids on which some of the temples stand, there are terraces along the slopes, on which other structures are placed; others are built against the hillside, with steps and a half-pyramidal foundation in front, while the rear presses against the hill. Here the lintels, which are stone, come into prominence, as they bear important inscriptions and figures and some of the richest sculptures of the Maya ruins. Stelæ also form an important feature of these ruins, Maler's number running up to twenty, while he notes as many as forty-six lintels. Most of these are figured. The stelæ are similar in form and finish to those at Piedras Negras, except that the carving and designs are decidedly superior. Several of the figures found here bear such a close resemblance to some at Palenque as to lead to the conclusion that one was copied from the other, yet without indication as to which was the original. The high roof-comb is also a prominent feature of this group.

Although carved images of the complete distinct human form are very rare in the ruins of this valley, one discovered by Charney at this point is of considerable interest. This is a great stone idol, with an enormous headdress rising in

the form of a fully spread fan. He says it is "unique of its kind, for nothing like it has been found either in Tabasco or Yucatan." Bandelier states, however, that some of the ancient pottery heads from the vicinity of Mitla have enormous headdresses, which encircle rather than crown the head, probably similar in type to Charney's idol. A limestone statue from Panuco with a similar headdress is noted by Bancroft.—(*Native Races*, iv, 462.)

Although the glyphs of the inscriptions at Yaxchilan are mostly similar to those at Palenque and Piedras Negras, and initial series with the nine cycles are also found here, there are apparently two abnormal types, one seemingly older and the other more recent than the usual type. The former is shown in Maler's Plate LVII (*Memoirs Peabody Museum*, ii, part 2), and is from lintel 22 according to his numbering. The glyphs of this inscription are considerably worn, which prevents an accurate comparison, yet the rude block form given them is unusual. The inscription on lintel 18, shown in the same work, is different from either of the other types, the peculiarities being due in part to the fact that the glyphs are incised—scratched in the smooth surface of the fine-grained limestone—and partly to the failure of the artist to catch in all cases the true form, as they are drawn, not photographed. These differences, and other peculiarities which could be noted if space permitted full details, lead to the conclusion that this locality was long occupied and had been subject to radical changes in the ruling authority.

Maler contends that when Maestro de Campo Alzayaga, in an expedition against the Lacandones in 1696, entered this part of the Usumacinta valley, he found this place in ruins. In support of this opinion he quotes from Villagutierre (*Historia Conquista Itza*, 1700). This writer, in his account of this expedition, says: "On the occasion of another expedition on shore, which some of the soldiers undertook, they arrived at a place, where it was plain that there must once have been a very ancient city, owing to the great number of stone foundation-walls, and enormous

ancient ruins of edifices which they found; which city must have measured more than a league in circumference." "Alzayaga's ruined city," comments Maler, "is doubtless our Yaxchilan, which, lying close to the bank of the river, could not have escaped the notice of the soldiers, who were doubtless not allowed to withdraw far from their piraguas." On the contrary, Charney is of the opinion that the place was occupied long after the arrival of the Spaniards, and was finally destroyed by a body of these European adventurers near the close of the seventeenth century. In support of this belief he also quotes from Villagutierre a statement that the Lacandon pueblos along the Usumacinta in this precise section were destroyed by a body of Spanish soldiers in 1694. The reader must be left to decide for himself in this conflict of authorities, unless he can manage to reconcile them.

In addition to these three noted groups a number of minor ruins have been found in the Usumacinta valley; as La Reforma, Chinikihá, Cháncala, Xupa, El Cayo, Budsilha, La Mar, El Chile, Anaité, and El Chicozapote. At all these points the same types, so far as revealed, were found as those described; and at most of them inscriptions in the usual glyphs and stelæ were discovered. In fact, the finest sculpturing in low relief shown in Maler's papers is from a stela at La Mar.

It is evident from the foregoing facts that the Usumacinta valley was well populated in pre-Columbian times, and must have been the seat of a nation or power of considerable importance. This population may have belonged to more than one tribe, nevertheless, the great uniformity in type of the ruins renders it quite certain that if the people were divided they must have been closely related and friendly. Evidently there are ample local remains in this region to give full scope to the Votanic and Xibalban traditions; and abundant data on which the student of the traditional history and mythology may build a literary structure more extensive than that which Abbé Brasseur de Bourbourg

has already constructed, and possibly more nearly in accord with the facts.

Before referring to the ruins of other sections we note the fact that Carl Sapper in his map showing the geographical sections according to his type classification includes all those in the region mentioned in the area assigned to the Chol type. This type he defines thus: "The door openings are generally closed above with level slabs of stone. The ornamentation of stone houses consists in stucco ornaments or in tablets containing images or hieroglyphics." This is placed under the group heading including the types where,—"In many buildings stone walls, cemented with mortar, are found. Stone houses with habitable inner rooms. The buildings mostly face the cardinal points." The last characteristic if reversed would be more in accordance with the facts.

Another point which may be referred to but will be more fully considered in a future chapter is the seeming lack of evidence of intertribal warfare. If all these pueblos were in ruins before the arrival of the Spaniards, the most reasonable conclusion, and that generally accepted by those who so hold, is that their abandonment and destruction were brought about by intertribal warfare. Now, of this there are no decisive or even apparent evidences; on the contrary, the indications strongly suggest a condition such as would attend abandonment on the appearance of the Spaniards. The inhabitants would have deserted their pueblos and fled into the forests, the Spaniards would have seized what was eatable and portable, and led by the priests would have destroyed or cast down the idols and objects of worship and fired the wooden and thatched dwellings. And this so far as is apparent is the condition in which the pueblos were left. Let the reader examine Catherwood's drawings as given by Stephens in his description of Palenque. Why are the heads of the priestesses and the infants they bear on their arms all erased or injured? It was the work of Spanish priests who looked upon these figures as the work of the

devil in imitation of the Virgin Mary and the Infant Lord. Evidence will be introduced later showing that this region must have been occupied at the time the Kiche and allied Mayan tribes entered Guatemala.

If we follow geographically the types according to the greatest similarity, we should pass to the border regions along the dividing line between Guatemala and Honduras; but the contrasts, which are by no means strong, will be more apparent by a description of two or three of the important ruins of Yucatan. The people who occupied the peninsula at the coming of the Spaniards were the Mayas proper, and, though split into numerous independent states, spoke the same language. These, of which as many as eighteen are enumerated within the bounds of the peninsula, were, according to tradition, the fragments of a once powerful confederacy, which had broken up about a century before the Spaniards appeared on the scene. The evidence in regard to the cities of this section is clear and decisive that some, of which the ruins mark the sites, were found already in ruins; but some of them were still inhabited, though abandoned immediately after the conquerors took possession. Nevertheless, it seems evident from all the data that their golden era had passed, and that the inspiration which gave birth to the numerous temples and important stone structures had departed. Herrera states that at the fall of Mayapan (1460 is the date he assigns) which is supposed to have been the capital of the confederacy, the conquering caciques took away "all the books" of the kind they had that they could obtain, for the instruction of their people, and on their return home erected temples and palaces, which is the reason why so many buildings were seen in Yucatan; that following the division of the territory into independent provinces, the people multiplied exceedingly, so that the whole region seemed but one single city. However, there are few students who will believe, notwithstanding the great historian's statement, that the numerous structures whose ruins are now scattered over Yucatan

were built during the seventy or eighty years immediately preceding the conquest by the Spaniards; nor will they believe that the division into independent nations was conducive to increased population and prosperity, especially in view of his statement, confirmed by other authorities, that during this period the country was more than once swept by tornadoes, and decimated by pestilence and internecine warfare. This historian has compressed into three-quarters of a century the history of some two or more centuries.

One of the most interesting as well as noted groups of ruins in the peninsula is that known as Uxmal, situated about thirty or forty miles south of Merida. This consists of some five or six buildings mounted as usual on platforms or pyramids, a so-called tennis court, and some three or four mounds whose superstructures, if any ever existed, have entirely disappeared. The area covered by this group is not large, probably not exceeding half a mile square, but scattered remains are found at points beyond this limit. "The place when inhabited," remarks a recent visitor, "must have been important, and no doubt presented a brilliant and imposing effect. Though the buildings are now much dismantled and buried in a deep forest, save where recent clearings have been made, they are still impressive in the extreme, and it is difficult to realize that the huge pyramidal masses, rising like hills above the general level, are really wholly artificial."

The most important monument at this point is that which has long been known locally as the Casa del Gobernador, or Governor's House. This is built on the uppermost of three colossal terraces; and is the most extensive, best known, and most magnificent ancient monument of Central America. The second of these three terraces, which together form a kind of pyramid, presents a broad esplanade in front of the building; the third, which is set back somewhat toward the rear, is long and narrow, so as to leave a promenade only some thirty feet broad around the house. The latter is unusually long in proportion to the width, the length

being about three hundred and twenty-five feet, while the width is only forty feet. The height of the walls, which rise perpendicularly to the level top, is twenty-five or twenty-six feet; nearly one half of this height being occupied by an immense, profusely ornamented frieze, running entirely round the faces and ends of the building, a distance of seven hundred and thirty feet.

The elaborate ornamentation, however, cannot be clearly understood from any description, however detailed and accurate. This is made up entirely of well-wrought stone, and consists of a checkered background, upon which run rectangular Greek frets, and series of bars terminating in serpent heads, the interspaces being covered with hieroglyphs. Human figures with immense headdresses formerly stood over the doorways, but only the head ornaments remain, the bodies having been broken away. In addition to these there is an upper line of great stone masks, with long, upward curved elephant-trunk noses, though most of these have been broken off.

The building, which faces east, is partially divided into three portions by two great transverse archways, now walled up, but formerly, when as originally designed, passing entirely through the structure. The long middle section is twice the length of the end sections combined. The front wall is pierced by nine principal doorways, now much broken down above, and by the two archways mentioned. The back or western wall is unbroken save by the two archways, and is nine feet thick up to the spring of the triangular inner arch that forms the ceiling. This long, narrow building is divided lengthwise into two series of rooms, the entrance being from the front, the inner or rear series having no opening save to the outer series. The width of the rooms is some ten to twelve feet. The arch forming the ceiling, which runs lengthwise, is sharply triangular and finished at the top with a cap stone. The door lintels were of wood, and to their decay is due the broken-down condition of the wall at these points. The interior

of the thick walls and the heavy roofing, which is filled in so as to bring it substantially to the level top, is composed of rough stones and mortar, and so well packed that the exposed face where the casing stones have fallen away presents the appearance of an ordinary rubble wall. Broad flights of steps led down the terraces in front.

A northwestern rectangular extension of the second terrace of the Governor's House sustained a small structure, of similar long, narrow form, known as the Casa de Tortugas, or "House of Turtles," so named because of a line of sculptured turtles along the frieze mouldings. One division of the frieze consists of a band of columnar forms. This building was probably an adjunct to the Governor's House. Touching and encroaching to some extent on the southwest corner of the three terraces was a great truncated pyramid some sixty or seventy feet high, and measuring about two hundred by three hundred feet at the base. Immediately west of this great pyramid stood, and in part stands yet, a quadrilateral structure locally known as the Casa de Palomas, or "House of the Pigeons," so named from the high serrated roof-comb perforated by numerous openings like pigeonholes. Attached to this building in the rear was a second pyramid surmounted by a small temple.

Second in importance only to the Governor's House is the so-called Nunnery, a great quadrilateral structure, consisting of four long, narrow, rectangular buildings surrounding an open court, which stand on terraces, leaving open spaces at the four corners where they do not connect, the south building alone, which seems to have been considered the front, having an entry way through it. The inner façades facing the court have on the upper part, like the Governor's House, a broad, richly ornamented frieze reaching from the top of the doorways to the flat roof. These probably exceed those of the Casa del Gobernador in variety of designs and delicacy of finish. Among these designs the great snouted mask is prominent, being found on all the fronts, and on the north side is placed in vertical tiers

of five or six at the corners and over alternate doorways. These masks are formed by the arrangement of minor features and are rectangular in outline. They are probably intended to represent Tlaloc or the Maya rain god, to whose cult this group of buildings may have been devoted. The upward curve in these mask snouts, and Waldeck's erroneous drawings of some glyphs, have induced some writers to suppose the people must have had some knowledge of the elephant, as they could not believe they were taken from the tapir snout, which has a slightly downward curve; yet figures in the Dresden codex evidently intended to symbolize tapir heads have the snout curved upward fully three-fourths of an entire circuit.

Next to the masks the most important feature in the ornamentation of these façades is the serpent, the arrangement of which along the face and around the panels is considered a masterpiece of decorative sculpture.

Directly east and almost adjoining the Nunnery is the Casa del Adivino, or "Magician's House," or, as very generally designated, the "Dwarf's House." This is a prominent object of the group because of the very steep pyramid on which the building stands. The temple itself is small and insignificant; the unusual feature of the pile is a structure, probably a temple, built against and into the north side of the pyramid, its roof being on a level with the top of the pyramid. The front of this structure is about twenty-two feet square and is entirely covered with ornamental work. The large doorway is occupied by a colossal snouted face or mask twelve feet square, made up of striking and unusual details. Among these was probably a life-size human statue (now lost) standing on the snout and resting against the forehead; others are a pair of tigers. The decorations of the corners comprise smaller masks, seven in each tier.

It has been supposed from native traditions that this city was built or enlarged by the Tutul-Xiu, of whom further mention will be made. The reign of this dynasty, with

Uxmal as the capital and royal abode, was the most glorious period of Mayan history, which Thomas has suggested extended from the early part of the twelfth century until the fall of Mayapan. But why it, with its magnificent temples and great structures, was abandoned by the Xiu and Mani selected as their home, which they occupied at the arrival of the Spaniards, is unknown. That Uxmal was partially inhabited at that time is proved beyond any reasonable doubt.

## CHAPTER XI

### *CHICHEN ITZA—QUIRIGUA—COPAN*

SITUATED some distance directly east of Uxmal, nearer the eastern side of the peninsula of Yucatan, are the ruins of Chichen Itza, which in grandeur and extent vie with those of Uxmal. Like the latter, they are situated in the midst of a forest-covered plain, whose monotony is broken only by minor irregularities of the rocky surface. "Chichen Itza" signifies "The Mouth of the Well of the Itzas," and the name is supposed to have been given because of the presence of two great natural wells or cenotes within its area. The principal ruins are included in an area considerably less than a mile square, and consist of half a dozen important piles, with remains of numerous inferior structures scattered about, which have not been explored. The pyramid-temple is the prevailing type, though some of the buildings are on the natural surface; the ground plans are mostly simple arrangements of corridors, vestibules, and chambers; the walls are generally vertical, the upper zone of the outer face ornamented, the lower portion plain; the roofs are level and covered with cement. Ordinary surface masonry is often irregular, imperfectly hewn stones laid up with little skill; but important wall surfaces are generally faced with accurately hewn blocks, neatly laid, but with little mortar except at the back. Here, as elsewhere in Yucatan, the wooden lintel was the weak feature of the construction.

"The study of even a single example of the great façades," says Professor Holmes, "is sufficient to impress

upon one the vast importance of the sculptor's work, but the immense range of his field is appreciated when the heavy rattlesnake columns, the colossal serpent balustrades, the long lines of caryatid-atlantean figures, and the graphic relief sculptures of temple interiors and pillars, have been passed in review. The life subjects had perhaps in all cases a mythological origin and application, being employed in buildings or situations consistent with their symbolism. Purely geometric motives are numerous, important and highly varied and specialized, indicating on the part of this people a ripe experience in various branches of art in which the esthetic had equal consideration with the symbolic."

Although there was but little modelling in stucco here, plaster was universal; every imperfect surface was made even by this means, and then treated with colors which were varied and brilliant. The general plan of dividing the building into rooms with vaulted ceilings, as heretofore described, was also followed here.

One of the most interesting remains of this group, in some respects, is the so-called Nun's Palace. This is of three stories; the lower stage, although vertical, with mouldings around the top and a narrow ledge around the bottom, is apparently solid. Ascent to the second and third stories was made by broad stairways in front. The portion of the second-story building supporting the small upper story is also solid, the filling up having apparently been an afterthought for the purpose of supporting the small upper structure.

The door jambs, lintels, and rounded corners of the building are formed of stones of large size. One of the most striking peculiarities observed here is the retreating profile of the upper wall, a character occurring rarely in Yucatec buildings, but almost universally in the Usumacinta province. This fact, as will be seen hereafter, becomes important in tracing the development of art in this region. This building is also unique in regard to its decorations. The lower wall is elaborately embellished with geometric

sculptures arranged in large panels. The large panels in the end of the building are filled with heavy lattice work. The ornamentation of the upper story, as given by Charney, consists chiefly of panels with central rosettes.

This building has associated with it an L-shaped adjunct, and two small detached structures, standing on the natural ground surface. The first of these, the adjunct, is about twenty-three feet high. The lower portion of the outer face of the north and south walls has, alternating with the doorways, the usual mask and lattice decorations in panels, together with some plain spaces. The façade on the east is filled with two tiers of great snouted masks at the right and left of the doorway. The upper zone presents one of the most richly decorated spaces of its kind in America. The north side contains six mask panels; the east façade has a central panel over the door, in which is a sitting figure, and mask panels at the right and left. Even the flaring coping stones on the south front are embellished with three examples of what are supposed to be Tlaloc symbols, as they embody the projecting snout and five or six pendent lines or grooves suggesting the rain god.

Another interesting ruin of this group is the Tower, or Caracol, so named because of a special stairway extending upward through the columnar, central mass of the building. It is mounted on the second terrace of a broad, elevated platform. The lower terrace is about twenty feet high, and the upper one twelve. The tower is a regular circle about thirty-nine or forty feet in diameter, and when complete was probably about the same height.

The most imposing monument of the Chichen Itza ruins is the so-called Castillo, or "Castle." This consists of a steep terraced, or stepped, pyramid, seventy-five or eighty feet high, and a blocklike superstructure. The sides of the pyramid rise at an angle of about fifty degrees, and are divided into nine steps; a broad stairway of hewn stone ascends the middle of each face. Each of these stairways was bordered by a kind of balustrade representing a

serpent, terminating at the base in a great serpent head with protruding tongue. The plan of the temple is of the usual form; a front entry extending the whole length of the building, from which a doorway leads into an interior dark room, around three sides of which runs a hall with doorways at the sides and rear leading out of the building, but not connecting with the inner room. The great front opening is interrupted by two equally spaced columns, which support the wooden lintel. These columns, which are circular, are carved to represent the body of a feathered serpent, almost exactly like those seen at Tula, the head being bent outward at the base. Columns of the same form are seen again in this group at the so-called House of the Tigers. The chief sculptures in the Castle are representations of the human form. These are elaborately costumed and have stern features. Some of the figures seen here are furnished with long, full beards.

The Gymnasium, also called the Tennis Court and the Ball Court, a little to the northwest of El Castillo, consists of four structures independently placed, but practically enclosing an oblong rectangular space which is about four hundred and fifty feet long and one hundred and twenty feet wide. The two parallel side structures are colossal walls, two hundred and seventy-five feet long, thirty-four feet thick, and about twenty-five feet high. These walls, which are faced with hewn stone, are supposed to have been used by the natives in their ball play, a game to which they devoted much time. Connected with the eastern wall were two small temples, which, from the remains, are supposed to have been among the most elaborate and interesting in Chichen Itza. The square columns and walls are covered with relief sculptures, those on the walls chiefly showing processions of elaborately costumed figures, with associated symbolic devices, and bearing evidences of having been colored. The figures and hieroglyphs found here have been well photographed by A. P. Maudslay in Part XIII of his great work.

The ruins at Izamal are noted chiefly on account of the great stucco face in a supporting wall at the base of one of the pyramids, and the *cara grande*, or "great face," mentioned and figured by Stephens, found at another part of the same pyramid. The pyramids, of which there are several, including one forty feet high, are the chief remains which tell of the former existence of the pueblo, as the structures which once stood on these mounds have entirely disappeared. Although Izamal holds an important place in tradition, which makes it the chief home of the culture hero Itzamna, yet it was apparently in ruins when the Spaniards arrived.

Landa, who was in Yucatan as early as 1540 and saw the country and people before any great change had taken place through European influence, says:

"Before the arrival of the Spaniards, the aborigines lived in common, were ruled by severe laws, and the lands were cultivated and planted with useful trees. The centre of their towns was occupied by the temples and squares, round which were grouped the palaces of the lords and the priests, and so on in successive order to the outskirts, which were allotted to the lower classes. The wells, necessarily few, were found close to the dwellings of the nobles, who live in close community for fear of their enemies, and not until the time of the Spaniards did they take to the woods."

The culture hero of Chichen Itza was, according to native tradition, Cukulcan, a name signifying "feathered serpent." It was said that he arrived from the west, but whether with or after the Itzas is not stated, but probably, as seems to be indicated by some points of the tradition, after the city had been founded. According to Landa, the principal temple, built no doubt after his departure, was called Cukulcan, in honor of his good deeds. It was through him the people believed they obtained their arts, religion, and mode of government. After ruling over the people of Chichen Itza for a time, he left them and founded Mayapan, which he made the seat of his government. At length he disappeared, to be known and honored, as many believed, as

the god Quetzalcoatl in Mexico, the name "Quetzalcoatl" having precisely the same signification in the Mexican language as "Cukulcan" in Maya. In Mayapan a temple was also built in his honor, which, Landa says, was round, with four doorways. The fact that circular temples have been found, one at Chichen Itza and one at Mayapan, and nowhere else in Yucatan, and that these circular temples are each entered by four doors, is, as Brinton suggests, seemingly a partial confirmation of this tradition. These facts at least show the firm belief of the people of these places in their culture hero, Cukulcan.

Some reference to the era of original entrance into Yucatan was made in a previous chapter, but we may add here the following data relating to the age of Mayapan and Chichen Itza, drawn chiefly from the recorded Maya traditions. According to the most reasonable interpretation of these traditions, most of which have been collected and published by Dr. Brinton in his *Maya Chronicles*, with English translations, Mayapan was destroyed about or only some four or five years previous to the middle of the fifteenth century. Landa's calculation would place the event about the year 1446; while Herrera's statement that the destruction happened, "according to the reckoning of the Indians, about seventy years before the Spaniards came into Yucatan," would make it only two or three years later, though he says 1460. As the latter author tells us that the city was destroyed five hundred years after it was built, this, which is evidently only an approximation, would carry back the date of the founding to the first half of the tenth century.

As it appears from the Maya traditions and the evidence obtained by Landa and Herrera that Chichen Itza was already in existence when Mayapan was founded by Cukulcan, this will carry back the settlement of the former to a date preceding the tenth century. According to Thomas's calculation from the tradition (*Study of the Manuscript Troano*), this took place about the close of the sixth or the

beginning of the seventh century. It is, therefore, perhaps safe to assume that Chichen Itza, which was twice destroyed, was in existence before the commencement of the ninth century; however, it is known that it was inhabited, at least in part, at the coming of the Spaniards. It is probable, judging from all the data we have bearing upon the subject, which cannot be given here, that the imposing structures whose ruins we have briefly described were built long after the date of the founding. There are some reasons, which will be noted elsewhere, for believing that the Itzas came to this part of Yucatan from the Peten region further south.

There are many other ruins in the peninsula, a number of which have been more or less thoroughly explored; those which present but slight variations in type must be passed over without further reference. Before referring to the ruins in Guatemala, attention should be called to some singular remains in British Honduras recently explored by Thomas Gann. These, which are in the northern section near the village of Corozal, consist of a number of mounds covering the remains of stone structures. Reference is made to them here on account of the peculiar wall paintings.

The walls of the building found in mound numbered 1 by Gann were, as he tells us, covered externally with painted stucco, which, notwithstanding the dampness of the climate, was found to be in an excellent state of preservation. The peculiarities of these paintings, which Gann figures in color in his paper published in the *Nineteenth Annual Report of the Bureau of Ethnology*, consist of a combination of Mexican figures, with Maya hieroglyphs; that is to say, while the colored figures have undoubtedly a strong resemblance to those of the older Mexican codices, we find scattered among them, as shown in Gann's plates xxix and xxx, quite a number of Maya glyphs.

Gann, after referring to the Maya symbols, calls attention to what he believes to be similarities to certain Maya figures, and thus argues their Maya origin. But the much

stronger resemblance of the figures as a whole as well as in detail to the figures of the Mexican codices so greatly overrides minor resemblances to Mayan characters as to render them of little significance in regard to origin. Until further data are obtained we must conclude that here is evidence of a Mexican element in a Maya community. The date of the destruction of these buildings, Gann thinks, is indicated by the presence here of Spanish occupancy, and a Spanish church of which he can find no historical notice, though it is known that Bacalar near by was one of the earliest Spanish settlements in Yucatan. The presence of a Mexican colony in this section is an interesting fact, and one which may lead to the solution of some of the problems of prehistoric Yucatan.

Extensive ruins have been discovered at Tikal, about twenty miles northeast of Peten, which are in some respects remarkable. According to Maudslay, one of the pyramids, including its superstructure, measured up the slope nearly three hundred feet. With its fine wood and stone carvings, this explorer thinks this pyramid "must have taken hundreds of active minds and thousands of skilled hands to have raised and perfected and kept in order." Here as at Copan, some, at least, of the pyramids are carried up in great steps. Here also has been found the finest native wood carving of America, so far as known. The chief features of this magnificent sculpture are an enormous arched and profusely ornamented serpent, holding between its expanded jaws a human form with lofty headdress; and beneath the serpent fold, a standing human figure with shield on the left arm, and holding a staff or lance in the right hand. This figure is literally enveloped in ornaments. In the upper right and left hand corners are several columns of hieroglyphs skilfully and accurately carved, among which can be easily recognized day symbols with numerals attached showing not only the forms found at Palenque and in the manuscripts, though more ornamental, but indicating also precisely the same order in counting the day series.

The ruins at Quirigua, on the Rio Motagua, in eastern Guatemala, which have been explored and described by Maudslay, and have furnished him with some of the most important inscriptions of the many he has collected and published, are important chiefly on account of the great monoliths or stelæ that they include and the inscriptions that they bear. They consist of numerous square or oblong mounds and terraces, varying in height from six to forty feet, some isolated, others clustered in irregular groups, most of which are faced with worked stone, and were ascended by flights of stone steps. Some thirteen or more large, carved monoliths are arranged irregularly around what was probably the most important plaza of the pueblo. Six of these monuments are tall stones measuring three to five feet square and standing fourteen to twenty feet out of the ground. Five are oblong or rounded blocks of stone, shaped so as to represent huge turtles or armadillos. All these monoliths are covered with elaborate carvings; usually, on the front and back of the taller ones there is carved a huge, full-face human figure, standing in a stiff and conventional attitude. The sides are covered with lines of hieroglyphs and squares, or cartouches of symbols. Some of the figures of these monoliths appear to be females. The hieroglyphs are of the same type as those already mentioned, the day symbols and numerals, so far as determinable, being similar to those at Palenque and Copan.

One of the most important groups of ruins in Central America is that known as Copan, situated just within the western boundary of Honduras, some twenty-five or thirty miles south of Quirigua. A part of the area is bounded by the little stream known as Copan River. We have in this instance a description of these ruins written as early as 1576 by Diego de Palacio, which Maudslay, who has spent much time in studying them, considers as more than ordinarily trustworthy considering the time when it was written. Because of the means it affords of comparing the ruins as seen in the last half of the sixteenth century with them

as they appear at the beginning of the twentieth century, we give the translation as follows:

Near here on the road to the city of San Pedro, in the first town within the province of Honduras, called Copan, are certain ruins and vestiges of a great population and of superb edifices, of such skill and splendor that it appears they could never have been built by the natives of that province. They are found on the banks of a beautiful river, in an extensive and well-chosen plain, temperate in climate, fertile and abounding in fish and game. Amongst the ruins are mounds which appear to have been made by the hand of man, as well as many other remarkable things.

Before arriving at them, we find the remains of thick walls, and a great eagle in stone, having on its breast a tablet a yard square, and on it certain characters which are not understood. On arriving at the ruins, we find another stone in the form of a giant, which the elders among the Indians aver was the guardian of the sanctuary. Entering the ruins, we find a cross of stone, three palms in height, with one of the arms broken off. Further on, we come to ruins, and among them, stones sculptured with much skill; also a great statue, more than four yards in height, which resembles a bishop in his pontifical robes with a well-wrought miter (or his head) and rings on his fingers.

Near this is a well-built plaza (or square), with steps, such as writers tell us are in the Coliseum at Rome. In some places there are eighty steps, in part at least, of fine stone, finished and laid with much skill.

In this square are six great statues, three representing men, covered with mosaic work, and with garters round their legs, their weapons covered with ornaments; and the other two of women, with long robes and head-dress in the Roman style. The remaining statue is of a bishop, who appears to hold in his hand a box or small coffer. They seem to have been idols, for in front of each of them is a large stone, with a small basin and a channel cut in it, where they executed the victim and blood flowed off. We found, also, small altars used for burning incense. In the center of the square is a large basin of stone [depressed court] which appears to have been used for baptism, and in which, also, sacrifices may have been made in common. After passing this square, we ascend by a great number of steps to a high place, which appears to have been devoted to mitotes and other ceremonies; it seems to have been constructed with the greatest care, for through the whole of it there can still be found stone excellently worked. On one side of this structure is a tower or terrace, very high, and overhanging the river which flows at its base.

Here a large piece of the wall has fallen, exposing the entrance to two caves or passages extending under the structure, very long and

narrow and well built. I was not able to discover for what they served or why they were constructed. There is a grand stairway descending by a great number of steps to the river. Besides these things, there are many others which prove that here was formerly the seat of a great power and a great population, civilized and considerably advanced in the arts, as is shown in the various figures and buildings.

I endeavored with all possible care to ascertain from the Indians, through the traditions derived from the ancients, what people lived here, or what they knew or had heard from their ancestors concerning them. But they had no books relating to their antiquities, nor do I believe that in all this district there is more than one, which I possess. They say that in ancient times there came from Yucatan a great lord who built these edifices, but that at the end of some years he returned to his native country, leaving them entirely deserted.

And this is what appears most likely, for tradition says the people of Yucatan in time past conquered the province of Uyajal, Lecandon, Verapaz, Chiquimula, and Copan, and it is certain that the Apay language [Maya?] which is spoken here, is current and understood in Yucatan and the aforesaid provinces, It appears, also, that the design of these edifices is like that of those which the Spaniards first discovered in Yucatan and Tabasco, where there were figures of bishops and armed men and crosses. And as such things are found nowhere except in the aforesaid places, it may well be believed that the builders of all were of the same nation.

This group is singular in that the various structures, instead of being elevated on separate platforms or pyramids placed on the original surface of the ground, are built on a single elevated surface, on which the chief monuments stand, the larger inner courts or spaces being on the first or general level. On this as a base arise the various pyramids, platforms, and terraces of the group, most or all of which were crowned with buildings now fallen into ruin or represented only by heaps of débris, much of which has fallen down the slopes. The top of some of the structures on this great platform, as the wall facing the river, are as much as one hundred and seven feet above the water level.

Archæologists have generally been more interested in the sculptured monoliths scattered among the crumbling structures of this group, some fallen from their pedestals, but most still standing as silent watchers of the scene of former

glory in which it is probable they played an important part, though not actively yet as objects of adoration and sacrifice, than in the structures. These, though of great interest as well as of great importance to the antiquary, and especially to the student of Central American paleography, are exceeded in some respects by the architectural remains. It is the massiveness, the variety of details and above all the immense amount of cut stone that has been used in the substructures, pyramids, terraces, and other foundations, and the innumerable flights of steps, that excite our wonder and admiration for the builders of these prehistoric structures.

Let anyone who has not had the good fortune to visit the locality study carefully the photographic illustrations in the *Memoirs of the Peabody Museum*, i, No. 1, 1896, especially Plate III, and he will be satisfied of the correctness of the statement of one of the explorers, that it was cut stone here, cut stone there, cut stone everywhere, that even in some cases the builders, as though taking delight in the work, had covered the very slopes of the pyramids with cut stone. Flights of steps were everywhere, as it seems, that a slope afforded a position, as seen in Fig. 2 of the plate referred to. Not content with carefully cutting the steps, both on the front and top, many of them were covered with hieroglyphs and other carefully sculptured figures. Even the monoliths were provided with a double under-pinning of hewn stone.

Although but small portions of the walls of buildings have been discovered, sufficient examples of ornamentation have been found to show that art had reached here a stage as advanced as at any other point in Central America. Among the discoveries the following may be mentioned as indicating the art types: the highly ornamented monoliths showing human forms flanked by hieroglyphic inscriptions, which have become well known through Stephens's work and Maudslay's photographs; an inner step which has carved on it a number of human figures seated cross-legged and covered with elaborate breastplates and other

ornaments; a carved ornament, made up of several stones let into the wall, rising from this step on each side of the doorway, and extending upward to the top of the wall. This carved figure appears to be the conventionalized form of the serpent head which is repeated in other parts of the group. Above this figure, and extending several feet each side of the doorway, runs an elaborate cornice, ornamented with seated human figures and hieroglyphs carved in medium relief. Many of the steps bear inscriptions; one is ornamented with a row of teeth, others with human figures. In one place the space between flights is covered with sculptures, among which are rows of death's heads. One of the altars which stand before the monoliths is a great carved turtle. At points, human and grotesque heads are built into the wall; elsewhere are seen human figures seated on huge skulls, and figures partly man and partly serpent, which Maudslay, for want of a more definite name, terms serpent men.

The interior of the mounds and terraces consists chiefly of rubble, similar to that found in the Yucatec structures, but, seemingly for the purpose of giving additional strength, they have here interior supporting walls buttressed by means of slopes, which are faced with cut stones.

We close our description of these remarkable ruins with the following notice by Maudslay of the monoliths:

> The monolithic monuments at Copan are cut from a somewhat decomposed trachyte rock; for convenience of description they may be divided into Stelæ and Altars.
>
> On the front of each Stela, and in some cases on both front and back, is a representation of an elaborately decorated human figure. On the back (when it is not occupied by a figure), and in some instances on both back and sides is a hieroglyphic inscription. The design is sometimes completed by the addition of scroll-work derived from the form of the feathered serpent, to which is added a number of small human and grotesque figures. The ornamentation throughout the sculptures is no doubt to a great extent symbolical, and in the decoration of the Stelæ more attention appears to have been given to the display of such ornamentation than to securing correct proportion in the representation of the principal figure; but that the errors of proportion did

not arise from the want of knowledge is clearly shown by the far superior treatment of some of the smaller figures on the same monuments.

Almost the whole of the ornamental carving decorating the Stelæ at Copan is derived from the following subjects: The feathered serpent, grotesque human and animal figures and masks, feathers and feather-work, fish, bands and plaits made of some pliable material such as leather or bark-cloth, and loops and ties made from some pliable material. Geometrical patterns, except such as are formed by the folds and plaits of a material with straight parallel edges, are not to be found (unless circles and dots can be so considered). Foliations and other vegetable forms are (with possibly one exception) entirely absent from the designs.

The dress and ornaments of the human figures represented on the Stelæ, although affording infinite variety in detail, are not only similar in general design on all the monuments of the same class throughout Central America. . . .

It is evident from the brief notice given here of the ruins of Copan that it was one of the most important centres of population in Central America preceding the discovery, a place where native art and native culture had perhaps reached its most advanced stage in North America. There are some reasons for believing that it had been occupied for a long period before it was abandoned, possibly for several centuries. This belief is based in part on the fact that the explorers on behalf of the Peabody Museum found beneath some structures they excavated evidence of older structures which had occupied the same spot. They remark that "No explanation can at present be given of these underground walls and floors. They are entirely below the surface of the surrounding plaza; the upper parts of the walls are broken and irregular, as if part had been torn down, and they are completely buried by the underfilling of the mound; the entire face was plastered, and the plaster at the corners showed traces of paint. There seems to be only one reasonable conclusion—that they are the remains of older buildings that had been condemned or were in ruins before the later structures were built." In addition to this, Maudslay mentions evidence of the closing up of rooms and changes in one of the buildings.

The absence in the figures and decorations of armed warriors or warlike scenes, as seen at Chichen Itza, indicates a condition of peace, but this fact does not prove, as Maudslay thinks, that the abandonment of this and other cities found in ruins at the coming of the Spaniards, was not in consequence of intertribal warfare. That the people were "in a state of decadence, and that they had almost ceased to be builders," may possibly be true of some sections; but even had this been the condition it was most likely brought about by the warring of the tribes among themselves. But we are inclined to the opinion that the abandonment of the pueblos containing stone buildings was more largely due to the appearance of the Spaniards than is now generally maintained. The country over which Alvarado swept like a devastating cyclone—and this city was in its pathway—was a country of desolate ruins in less than half a century thereafter.

Other ruins and monuments, some of considerable extent, are found in various sections of Guatemala, but reference will be made here only to some monuments found at Santa Lucia Cozumalhuapa in the southeastern section, which differ from any that have been mentioned. They are large blocks of stone in the form of rectangular stelæ, most of them of the usual size, being about twelve feet long, three feet wide, and two feet thick. Dr. Habel, who was the first explorer to visit and describe these blocks, informs us that they were found in the vicinity of the village of Santa Lucia in "an extended heap," and that there were "other slabs only a few rods distant interred in such a manner as to present to view nothing but the sculptured surfaces." They do not appear to have been in relation to the ruins of any building or other structure.

These blocks are all sculptured on one side only; the sculpturing, except of three, are in low relief. "In seven instances," remarks Dr. Habel, "the sculpture represents a person adoring a deity of a different theological conception in each case. One of these seems to represent the sun,

another the moon, while it is impossible to define the character in the remaining five. All these deities are represented by a human figure, of which only the head, arms and breast are correctly portrayed." "Four of the other sculptures represent allegorical subjects; two of them the myth of the Griffin, the bird of the Sun." "The sculpturing is confined to the upper nine feet, while the lower three feet appear to have served as a base."

From the illustration in Dr. Habel's paper (No. 269 of the *Smithsonian Contributions to Knowledge*, 1878) it is evident that most of the sculptures are intended to represent worship and human sacrifice, severed human heads being seen in most of them. There is, however, no indication of extracting the heart. One rather strange fact noticeable is, that some of the severed heads have beards, apparently belonging, as Dr. Habel suggests, to a race different from that of the officiating priest. Some of the figures represent death. One of the sculptures represents a man reclining, with his head resting on a support; the emaciated face and position indicate that the person is sick. He is stretching out his left hand as if appealing to death, or the god of death, represented as a skeleton, who stands at his feet. The death-figure, which is engirdled by a serpent, is pointing with his skeleton hand at the prone individual; at the back of his head are two small wing-like appendages, and along his arm are attached sharp leaf-form objects, which may represent flames, as they are like the emanations surrounding the sun figures, but differ from feathers shown on other slabs.

Speech is represented in these sculptures as in some of the Mexican codices by curved and broken lines with nodes at intervals. In some of them are rows of small circles, evidently numerals. There can be little doubt that these sculptures were made by the Pipils, a tribe of the Mexican group of the Nahuatlan stock. There is clearly nothing characteristic of Maya culture found in them.

Some discoveries of pottery and metal ornaments made some years ago in that portion of Panama known as Chiriqui

have excited considerable interest in the minds of archæologists because of their unique character. Our knowledge of the archæology of this province is furnished by the manuscript notes of J. A. McNeil, who made the greater part of the collections from this province.

These specimens of pottery and metal ornaments were found in ancient graves. These graves, where they are in groups or cemeteries, do not appear to have had any uniform relation one with another or with the points of the compass. In some cases they were ranged around what seemed to be a central tomb; and again, according to McNeil, they were placed end to end. This explorer describes the graves as being oval and quadrangular and as having a depth ranging from a few to eighteen feet. The bottom portion or cist was usually faced with stone slabs and covered with flat stones, sometimes very heavy. The upper portion of the pit was generally filled with water-worn stones and dirt. The exact position in which the articles were found is not very clearly stated; moreover, it seems that the bodies of the dead had almost entirely disappeared.

The relics obtained were of stone, clay, and metal. The metal specimens include gold, silver, copper, and tin, the latter in alloys forming bronze. The gold is in alloys, or used as a surface coating. The figures are mostly grotesque representations of the naked human form; some, however, are animal forms, especially reptiles. Bronze bells plated with gold are also included in the collection; these are of the pear-shaped variety with slit and loose ball within.

The metal objects are of small size, rarely reaching a pound in weight, and are almost exclusively pendent ornaments. Most of them have been cast in moulds, and generally represent animal forms; the pieces formed of alloy metal are mostly washed or plated with gold.

The great body, however, of the relics obtained here are of clay. Vases are found in great numbers, and, as a rule, are small and shapely; and are so smoothly finished and perfect in shape as to make one almost inclined to the

opinion that the wheel was used, though the experts on prehistoric pottery say "no." In addition to the beautiful and evenly formed olla-shaped vases, there are also in the collection tripod bowls; that is, bowls with three hollow legs, some of which have slits and contain one or more small clay pellets.

The whole collection, notwithstanding the opinion of specialists, bears a very suspicious look of being post-Columbian, and of having some relation to the Peruvian type. This suspicion has impressed itself on the minds of more than one student who has examined the pottery, nor has anything appeared to remove it in any of the published statements regarding the collection. The presence of bronze and of articles washed and plated with gold certainly indicates European influence, as does the fact that some of the metal objects were cast in moulds. The artists may have been natives, but natives taught by European artists. Moreover, the graves are peculiar, and the whole history of the finding of the articles is more or less shrouded in a mystery not conducive to conviction, nor as yet entirely cleared away.

The chief objects of interest to the archæologist which have been discovered in Nicaragua are rudely carved monoliths representing human and animal forms combined, the animal, usually alligator-like, holding the head of the human figure in its great jaws.

## CHAPTER XII

### *MAYA HIEROGLYPHS AND CALENDAR SYSTEM*

ALTHOUGH the general appearance of the stone structures, so far as shown by existing remains, and the ornamental sculpturing on the façades and other parts of the buildings are sufficient evidence of an advanced culture, the full purport in this direction is not seen until we study somewhat carefully some of the larger plans and designs. Take, for example, the great structure at Uxmal, known as the "Governor's House" it is evident from a study of the plan, proportions, and finish of the building as a whole, and the symmetry of the parts, that it is a single structure, planned at the beginning, and not formed by repeated additions. There are frequent instances in the Maya section where structures are more or less composite, formed by additions, but the great building at Uxmal was planned from the beginning by some native architect; based, it is true on known types, so far as the general plan was concerned, but with sufficient exactness to be followed out by the builder. Professor Holmes (*Arch. Studies Anc. Cities Mex.*, 94) judging from the two great arched passageways through the building, is rather inclined to the opinion that the original plan contemplated a great quadrilateral structure such as the Nuns' house; however, there does not seem to be adequate ground for this opinion, especially as the building as it stands seems to be complete in itself, and the width of the upper terrace is evidence that when it was planned the single elongate building as it now stands was certainly in view.

Not only did the original architect plan the arrangement and size of the rooms, doors, and the building, but he must have also correctly spaced in advance the frieze, and determined the size and forms of the various groups of ornamental sculpturing. Did he make drawings of his plans by which the builder was to be guided? De Lancey Gill, artist of the Bureau of American Ethnology, who made drawings for this and other Central American structures, and had charge of the preparation of models of them for the Louisiana Purchase Exposition at St. Louis, says that he believes it would have been impossible to carry out the plans of the Uxmal building without drawings made to a scale. He says the variation in the pieces of the frieze ornamentation, and of the corresponding positions they were to occupy, is too little to be accounted for on any other supposition than that the builder had drawings to a scale to guide him; and few, if any, who will take time to study carefully the models will be disposed to doubt this conclusion. Dr. Brinton, in his paper on "The Lineal Measures of the Semicivilized Nations of Mexico and Central America," insists that the Maya measures were derived directly, and almost exclusively from the human body, and largely from the hand and foot. It is apparent, however, from the very close uniformity found by Gill, that a fixed measure of length with divisional parts must have been used, and that a plan had been laid down to a scale which the builder could use and proportionally enlarge when necessary.

The evidence of mental training found in these facts affords stronger proof of advanced native culture than even the carvings and sculptures found in the Maya ruins which have been described. However, we must in no wise lessen our appreciation of the works of the sculptor and the builder. To how many devices, of which we have but little conception, must they have been forced, when all their work was done without a single iron or steel tool. They knew nothing of the hammer, chisel, auger, or nail of these metals; nor had they any wagons or beasts of burden.

These facts must be taken into consideration to appreciate properly the mental and artistic ability of this people. Nevertheless, there are other facts which give even stronger proof of mental culture than those named.

These are found in their complicated calendar system; their numeral system; their ability to carry arithmetical computations to very high figures; and above all, in the near approach they seem to have made to alphabetic writing, their system falling, apparently, but a step behind that of the ancient Egyptians.

As the numeral system of the Mayas lay at the base of their calendar system and is very largely used in their codices and inscriptions, we refer to it first, following Thomas in his paper on the *Numeral Systems of Mexico and Central America*, published by the Bureau of American Ethnology in 1901. We shall also follow the same author's later conclusions in regard to the Maya calendar and Maya codices and inscriptions, as given in his latest papers on these subjects.

Their method of enumeration, like that of all the stocks using the so-called "Native Calendar," was vigesimal; that is, having twenty as the multiple instead of ten, which is the multiple of the ordinary decimal system. This system having twenty as the multiple prevailed almost universally in prehistoric times in central and southern Mexico and Central America, although the method of carrying out the details in enumeration differed to some extent, as shown by the names given the respective numbers.

The Maya count to ten shows traces of a former quinary system, but from ten to nineteen it is based on ten; however, when twenty is reached, this number becomes both by name and count the unit of the second order, one being of course the unit of the first order. As twenty is the multiple in the system, four hundred will be the unit of the third order; eight thousand, the unit of the fourth order, etc. This system of abstract numbers they carried up to the sixth, or, as Brinton thought,—though the proof is lacking,—to the seventh order. Nevertheless, the Mayas, like

most native peoples, made but little use of abstract numbers, hence we find their principal use of numbers, so far as shown by their remaining records, was in relation to their calendar system and in their time counts. Here one step in the system of enumeration was modified so as to agree with the number of months in their year (eighteen); in other words, the multiple in the third step was changed from twenty to eighteen, as, according to their calendar system, there were eighteen months of twenty days each in their year. In this system the day became the unit of the first order, and the series was as follows:

| | | | | | |
|---|---|---|---|---|---|
| 1 unit | of the | first | order, | 1 day | |
| 1 " | " | second | " | 20 days | (1 x 20) |
| 1 " | " | third | " | 360 " | (1 x 20 x 18) |
| 1 " | " | fourth | " | 7,200 " | (1 x 20 x 18 x 20) |
| 1 " | " | fifth | " | 144,000 " | (1 x 20 x 18 x 20 x 20) |
| 1 " | " | sixth | " | 2,880,000 " | (1 x 20 x 18 x 20 x 20 x 20) |

These several orders of units, in their application to time counts, have received respective names, as the names "tens," "hundreds," "millions," etc., in our numeral system; thus, the unit of the second order is called *chuen* or *uinal;* of the third order, *ahau* or *tun;* of the fourth, *katun;* of the fifth, "cycle"; and of the sixth, "great cycle." These names have been applied by modern authors, without any original evidence on which to base them; nevertheless, the evidence is positive from the codices and inscriptions that the Mayas, or at least the Maya priests, did carry their time counts to the sixth order of units.

The people of this stock, as has been shown, engraved their peculiar hieroglyphic characters on stone tablets, on great monoliths, on the walls and lintels of their temples, painted them on plastered surfaces and on pottery, and wrote them on strips of parchment and agave paper, sometimes folding the latter into books. Where inscribed on stone or wood (for there are a few inscriptions on wood), they are made to stand out in low relief; in a few instances they have been incised on shells and pottery. The

individual glyphs are usually somewhat square in outline, those on stone varying from three and one-half to five inches square. They are usually placed in straight columns or horizontal lines, the column order being followed in the inscriptions wherever possible; while in the codices columns are used to some extent, and, in part, the same principle is carried out in groups of four, or in lines.

Some of the glyphs consist of an oval figure surrounded by a border, as in the Egyptian cartouche. These inclosed characters, with probably the exception of a single form, are symbols of the Maya days. It is by means of these day symbols and month symbols, which are also given in the inscriptions and the Dresden codex, that students ascertain positively that the Maya people were the authors. Diego de Landa, a Spanish bishop who went to Yucatan as a missionary in 1540, has preserved in his work (*De las Cosas de Yucatan*) the forms of these symbols, each with its proper name attached. As these names are those of the Maya days and months, and the ruins are in the regions inhabited, so far as known, only by Maya tribes, the remains, as well as the inscriptions, are attributed to these tribes, thus agreeing with the historic data so far as they go.

Of the Maya manuscripts or codices, as they are usually called, four known examples remain. These are the Codex Troano and the Codex Cortesianus, thought by most authors to be parts of the same book or manuscript, which are in Madrid; the Codex Peresianus, which is in Paris; and the Codex Dresdensis, the most important of the series, which is in the Royal Library at Dresden. These manuscripts are on a kind of paper made of the maguey plant. They are similar in form and finish, differing chiefly in length and contents. The Codex Troano, for example, is a strip of maguey paper about fourteen feet long and nine inches wide, both surfaces of which were first covered with a white varnish. The two faces were then regularly divided into spaces about six inches wide by black or red lines across the strip, in which spaces the hieroglyphs and figures, the

latter in black, brown, and red, and sometimes blue, were painted. The strip was then folded back and forth like a pocket map, in this case thirty-five folds, corresponding with the cross lines, representing, when pressed together, the appearance of an ordinary octavo volume.

The order in which the manuscripts and the inscriptions are to be read, first pointed out by Thomas (*Study of the Manuscript Troano*) is generally as follows: In the inscriptions, which usually consist of two, four, or six, or some even number of columns, the columns are to be taken two and two from left to right; the glyphs in each pair of columns are to be read from left to right and from top to bottom in the order of the letters in the annexed diagram. Where there is but a single column it is to be read from top to bottom, and a single line from left to right.

| | |
|---|---|
| *a* | *b* |
| *c* | *d* |
| *e* | *f* |
| *g* | *h* |

The order in which the glyphs in the codices are to be taken, where there is a regular arrangement, is substantially the same. Although the columns may consist of but two lines in depth, they are read in the order *a*, *b*, *c*, *d*, in the diagram, at least in the Dresden, Troano, and Cortesian codices. In the Dresden codex, however, the numeral and time series, some of which are quite long, are in some cases to be read from right to left by lines across the page, the lines following one another from the bottom upward. A considerable portion of almost every page in the codices consists of pictographic representations, chiefly human figures.

The interpretation of the Maya glyphs, so far as it has been carried up to the present time, consists almost wholly in determining those characters representing numbers, time periods, and their accompaniments, and also the relation they bear one to another in the manuscripts and inscriptions. No satisfactory evidence of phoneticism has been obtained, though it seems probable that in the case of a few

glyphs there are some indications of relation between sound and signification. This, however, is the utmost that can truly be asserted in this respect.

The characters denoting numbers, which, as yet constitute the most important class of those determined, belong to two quite distinct types. The usual form found in both codices and inscriptions, but more abundantly in the former, consists chiefly of dots and short lines; one dot denoting one; two dots two; and so on to four. Five is indicated by a short straight line; six by one line and one dot, thus ——·; and so on to nine; ten by two lines; eleven by two lines and a dot, and twelve thus ═·, and so on to fourteen. For fifteen three lines were used and the count is carried forward by added dots to nineteen ═ ····. The lines and rows of dots are usually horizontal in the codices; but in the inscriptions are as often perpendicular at the left side of the glyphs to which they are attached.

The numeral symbols of this type do not appear to have been used for any number greater than nineteen; relative position and other characters being used for other and higher numbers. For naught and twenty there were special characters; but for higher numbers position was used in the codices on the same principle that we use position with our Arabic digits, each step to the left being equivalent to multiplying by ten; that is, passing to the next higher order of units in the decimal system, the ten digits sufficing for this purpose.

In the Maya vigesimal system nineteen digits were necessary, and the increase was obtained by placing one number above another, each step upward being equivalent to passing to the next higher order of units. Thus, a short line and one dot standing alone would signify six units of the first order—in other words, six; but if placed one step upward would denote 120; in the third place, 2,160 (18 being the multiple at the third step); and in the fourth place, 43,200. The number in any one of these positions indicates the number of units of that order. This method

of expressing numbers is carried in the Dresden codex to the sixth order of units, the sum in one or two instances being, when reduced to units of the first or lowest order (in these cases days), as much as twelve millions in our decimal numeration. Line-and-dot numerals of two colors are quite common in the codices, one class black, the other red, but the red characters are not used, except in a single unexplained instance, to denote any number greater than thirteen.

Another class of number symbols, used almost exclusively in the inscriptions, were face figures. As position could not be well used in the inscriptions to denote steps in enumeration, symbols, chiefly face characters, were used to denote the order of units; then, by placing to the left or on top of these one of the nineteen digits, the number of units of the given order to be taken would be known. However, the Maya priests, apparently to render the interpretation still more difficult, used, in many inscriptions, face figures for the digits. A knowledge of the Maya numeral system, and of the method of expressing numbers is, therefore, absolutely necessary in the attempts to decipher the codices or inscriptions. It is also necessary in such attempts to have a somewhat thorough knowledge of the Maya calendar. As the characters are not phonetic, like the Egyptian hieroglyphs, the only means so far discovered by which to test an interpretation is by demonstrating the direct relation of glyphs in a group or inscription one to another. For example, if dates in an inscription can be connected by intervening numbers, this is proof, or at least a strong indication, that the interpretation is correct; and if the steps are multiplied, the evidence amounts to demonstration.

The Maya years consisted uniformly of three hundred and sixty-five days, no reference to or evidence of bissextile years (corresponding to our leap years) having been found in the codices or inscriptions. They were divided into eighteen months of twenty days each, a supplemental month of five days following the eighteenth. Each of these months had

a name and a symbol. They always followed one another in the same order, the year beginning with the month Pop. The twenty days were also named, each having its appropriate symbol. The order in which they followed one another was uniform, though the year did not always begin with the same day, the five in the supplemental month carrying the count forward five days each year. Although the days had their month numbers, as 1, 2, etc., to 20, as we say, the 5th, 6th, and 7th day of the month, there was another numbering, which applied to the days only. This was from 1 to 13, beginning again with the unit. These numbers were prefixed to the days and followed in regular succession, no day being without its number. It follows from this method that a day bearing both the same name and the same number will not recur until thirteen months have passed. This gives a cycle or period of two hundred and sixty days, which appears to have been more in use as a ceremonial or religious period, both among the Mayas and the Mexicans, than the secular year of three hundred and sixty-five days.

The order of the days and their numbering passed on from month to month and from year to year, without a break or change in the regular succession. There is one series of three hundred and twelve years in length in the Dresden codex, in which there is not a break in the succession, nor an indication of a bissextile year. There is a series given in the Dresden codex, covering thirty-four thousand and fifty-nine years nine months and thirteen days, the date of commencement and ending being given, which calculation shows to be correct; this is evidence that there can be no break or change in the succession of days, day numbers, or months. In this regularity of succession lies the possibility of determining the time series of the inscriptions and the codices.

It was maintained by early Spanish authors that both the Mexicans and Mayas managed by the addition of days at certain periods to keep the count in correct relation to the sun; and modern authors are ever and anon bringing

forward theories to explain the method of adjustment. So far the only known method by which it could have been done—in face of the recorded time series—was by making at arbitrary periods arbitrary skips which were not brought into the count. As fifty-two years is a multiple of all their regular time factors, the close of these terms would have been an appropriate time for such changes if they were made, of which, however, there is no proof.

It is a singular fact, if the so-called "Annals of the Cakchikels" are to be trusted, that the Cakchikels had in use a year, probably ceremonial, of exactly four hundred days. This is ascertained, not from any positive statement to this effect in the Annals, but from the dates given. The data given, however, furnish no hint as to the adjustment of this period to the solar year, or whether, in fact, any attempt was made in this direction.

As perhaps the best method of showing to what extent the Maya priests could and did carry their time counts, we give one example from Thomas's paper. As has been explained, the Mayas used *position* to indicate the higher number; the lowest representing days, or units of the first order; the second, going upward, units of the second order (sometimes called *chuens* or *uinals*); the third, units of the third order (sometimes called *ahaus* or *tuns*); the fourth, units of the fourth order (sometimes called *katuns*), etc. The steps in this enumeration, as already explained, are in accordance with the vigesimal system; that is, the steps increase twenty-fold, except that from the second to the third, where the multiple is eighteen. The example is from the Dresden codex.

| | | | | |
|---|---|---|---|---|
| (Great cycles) | 4 | . . . . | equal | 11,520,000 days |
| (Cycles) | 5 | ——— | " | 720,000 " |
| (*Katuns*) | 19 | . . . . | " | 136,800 " |
| (*Ahaus*) | 13 | . . . | " | 4,680 " |
| (*Chuens*) | 12 | . . | " | 240 " |
| (Days) | 8 | . . . | " | 8 " |
| | | | Total, | 12,381,728 " |

That is to say, the numeral symbols—dots and short lines—in the respective positions given are equivalent to 4 great cycles, or 4 units of the sixth order, equal to 11,520,000 days; 5 cycles, or 5 units of the fifth order, equal to 720,000 days; 19 *katuns*, or 19 units of the fourth order, equal to 136,800 days; 13 *ahaus*, or 13 units of the third order, equal to 4,680 days; 12 *chuens*, or units of the 2d order, equal to 240 days; and 8 days, or 8 units of the first or lowest order. In the codex, however, only the dots and short lines of this example are given.

The total amount expressed by this series is over twelve million days. This is a large number to be handled by a pre-Columbian native, yet it can be demonstrated by actual count that the Maya scribe used this number correctly in calculation. Immediately preceding the series is a date, and immediately following another date; and as it is the rule in both the codices and inscriptions that the numbers inserted between dates denote the lapse of time (number of days) from one to the other, we are justified in concluding that the same rule was followed in this instance. By making the calculation according to the Maya calendar system, we find that the 12,381,728 days is precisely the lapse of time from one of these dates to the other. As six series similar in character and extent are found in the Dresden codex, with preceding and following dates which calculation shows to be correct, the evidence of the ability of the Maya scribes to make this calculation is demonstrated.

Our object in calling the reader's attention to this example—though the complete explanation cannot be given here—is to show the advance made by the Maya priests in mathematics. Here we have what we may call denominational numbers which must be reduced to primary units, and these changed into the numbers of another denomination, that is into the years, months, and days of the solar series. It would be difficult for any one at the present day except an expert mathematician to calculate back or forward thirty-four thousand and fifty-nine years nine months

and thirteen days (the length of time of the given example) from a particular day in the present year, using our Gregorian calendar, and determine the year, the exact day of the month, and day of the week that will be reached. Yet this was accomplished by the Maya priests, in conformity with their calendar system, and with their cumbersome vigesimal method of counting. How did they accomplish it? No one save a mathematical prodigy can, at the present day, make the count by mental calculation alone. It was possible, as McGee suggested, for them to accomplish it by addition and subtraction, which Thomas has shown from the codices, by actual trial, to have been in all probability the method adopted. Nevertheless, calculation by this method, where such high numbers were used, could have been made only by figuring with a marking material on a smooth surface—in other words "ciphering" as the school children term it. The ability to make such calculations and express them in enduring records; to plan the large and highly ornamented structures now found in ruins; and form such a complicated yet systematic calendar system as that which prevailed among their tribes, is conclusive evidence of the advanced culture of the Mayas. However, where and when these arts had their origin are questions to which antiquaries seem, as yet, unable to give a satisfactory answer.

That the calendar in use in Yucatan at the coming of the Spaniards was of more recent date than that used in the Dresden codex and the inscriptions found in the ruins of Chiapas, Guatemala, and Honduras is indicated by the following facts. The Yucatec calendar, referred to and somewhat fully explained by Landa in his *Relacion de las Cosas de Yucatan*, and followed in the Codex Troano and Codex Cortesianus, differs from that of the Dresden codex and the inscriptions in beginning the years with the days Kan, Muluc, Ix, and Cauac, instead of Akbal, Lamat, Ben, and Ezanab, with which the years begin in the latter. Whether any of the inscriptions of Yucatan follow the calendar referred to by the Codex Troano and found in use by Landa is

uncertain. Thomas is inclined to think that a date in an inscription found at Xcalumkin, Yucatan, by Teobert Maler follows the Yucatec calendar. It appears, however, on the other hand, that Thompson has found an inscription at Chichen Itza which includes a so-called "Initial Series," following the old calendar system of the Palenque, Copan, and Quirigua inscriptions. At any rate, it is apparent that the Yucatec calendar which Landa found in use must be considered more recent than that of the inscriptions. When the change was made is as yet unknown, but most likely in comparatively recent prehistoric times, if not followed in the Yucatec inscriptions.

There is a growing impression among students of the Maya inscriptions that there is evidence of an era in use among the priests who made these inscriptions. This is based on the fact that a large proportion of the inscriptions begin with a numeral or time series which has nine cycles, or nine units of the fifth order, as its first term, counted always from the same date. As series commencing with this number are found at Palenque, Piedras Negras, Yaxchilan, Copan, and Quirigua more frequently than with any other number, students of Central American glyphs have concluded that it marks an era, as our "A. D." The chief objection to this theory is that this carries back the date over three thousand years preceding the time when the inscription was carved. Such an era could only be mythological or assumed, as it is wholly improbable that the reference could be to a historical event that occurred two thousand years before the Christian era.

Charles P. Bowditch, taking the several so-called initial series and assuming that the closing date indicates a period near the time of forming the inscriptions, which may have been at any time preceding the arrival of the Spaniards, shows that these several terminal dates, with the exception of two or three which appear to be abnormal, will all fall within a period of three hundred years. He argues from this fact, and seemingly correctly, that the various places

where these inscriptions have been found were substantially contemporaneous. This calculation fails, however, to give us any clue to the actual date of the founding of the pueblos or the making of the inscriptions; nevertheless, it does tend, as Bowditch has shown, toward confirming the Yucatec traditions found in the *Maya Chronicles* published by Brinton.

A study of the Maya glyphs fails to aid us in our search for their origin and first use. It is a strange fact, if we judge only by the hieroglyphic inscriptions and manuscripts, that we should be compelled to conclude that the characters used were brought to comparative perfection at the time they were invented. There are, it is true, some differences in form and degree of ornamentation, and to a certain degree greater perfection in type, in some cases than in others, but no examples, so far as we are aware, of the first rude beginnings, or original forms, have been found. Some comparatively rude forms are found painted on pottery and scratched on shells, and in a few instances written on parchment or other material; but these belong to what may be called the demotic stage and are not primitive forms, but comparatively recent.

Students who have devoted attention to the subject are generally, in fact, it may be said universally, inclined to the opinion that inscriptions preceded manuscripts; in other words, that the characters in the manuscripts were adopted from those in the inscriptions. This is doubtful, and, as it seems, improbable, for the following reasons. It is more than probable, in fact, it might be said certain, that inscriptions before being chiselled were sketched or marked off upon some smooth surface, as wood, maguey paper, or other material. It is certain that this was done, or that they were marked off upon the stone when the surface had been smoothed. The latter was doubtless done, even though they had been outlined on some other material. If the inscriptions were marked off before being chiselled, glyphs must have been written before the work of inscribing began.

Another fact which points in the same direction is the repeated statements found in the traditions regarding *pinturas* (paintings), writings, and books. One of the oldest Mexican traditions mentioned by Sahagun refers to their *pinturas*, and the traditions regarding the Toltecs refer to their writings. If this supposition be correct, it will not be difficult to account for the fact that we find no inscriptions showing the rude beginnings of hieroglyphic writing, as these were not made on stone, but on perishable materials.

As bearing on the question under discussion, and containing some suggestions to which we shall have occasion to refer in our next chapter, we venture to make a somewhat lengthy quotation from an article by George B. Gordon in the *Transactions of the Department of Archæology*, University of Pennsylvania (i, Part 1, 1904). We make this quotation in part for the reason that Gordon speaks from a personal knowledge of the section, being one of the leaders in the exploration of the ruins of Copan undertaken by the Peabody Museum. Nevertheless, we shall have occasion to differ from Gordon in regard to some of his conclusions.

In the absence of historical records referring to the origin of the Mayas and the development of their culture, taken in connection with the paucity of traditional accounts, our only reliable source of exact information lies in the archæological evidence that has survived the passage of time and has only recently begun to receive its proportionate share of attention from the scientific world. In order to realize the possibilities of this field of investigation, it is only necessary to observe what has been accomplished by the explorations that have been undertaken during the last twenty years. Although the individuals and institutions engaged in these explorations have been few and their resources small, they have been instrumental in bringing about a very considerable change in the condition of our knowledge of the ancient Mayas, and an equally significant change in the general attitude toward the ancient civilization of Central America, for the indifference of a few years ago has been gradually replaced by an interest more in keeping with the character of the subject.

The most striking feature of all the old Maya cities is that presented by the temples, rising with elaborate details of architecture and of ornament, upon broad pyramidal foundations,—a characteristic type that distinguishes the old Maya architect from all his brethren in

Ancient America, and that finds its nearest parallel in the pyramidal structures of the Aztecs. In these elevated sanctuaries are often found carved tablets containing hieroglyphic inscriptions in a style and character which form another distinguishing property of Maya culture, and give to the Maya scribe a distinct superiority among his ancient American brethren. Another remarkable feature found in many of the Maya cities consists of the sculptured columns of stelæ that have excited so much curiosity among travellers and explorers. These monuments are almost always rectangular in cross section, and vary in height from five or six to thirty feet. Sometimes the four vertical sides are covered with hieroglyphics from top to bottom, but the typical form has for its primal feature a human figure carved in high relief on one side, the other side being occupied by the inscription.

In addition to these imposing monumental remains, the many objects that have been brought to light by the recent explorations, representing every form of human activity except the working of metals and the arts to which that process paved the way in the modern world, possess an interest that appeals strongly to the imagination and enable us in some degree to realize the actual experiences of the ancient Maya people. . . .

To the archæologist, however, concerned as he is in the interpretation of such phenomena as his excavations bring to light, the item of supreme interest is that of the hieroglyphic inscriptions, and it is characteristic of all human endeavor that this interest gains rather than loses from the fact that these inscriptions contain so much that is still unintelligible. Notwithstanding the progress that has recently been made in our knowledge of the Maya hieroglyphics, the inscriptions are still, in part, all but a sealed book, affording just enough insight into the contents to whet, but not to satisfy the appetite. The most gratifying gain that has been made in this connection is the reconstruction of the calendar system in use among the Mayas and its application to the monumental records. When we consider that this discovery has been the work of very recent years, recalling how hopeless the task seemed at the beginning, there is reason to hope that the remaining problems are not incapable of solution. The efforts of the present generation should be directed first of all to the work of rescuing any possible clue before it becomes too late and of preserving the inscriptions that still remain. In this respect Central America offers a vast and fascinating field for exploration.

Although no one has yet been able to read in the Maya inscriptions such texts as may relate to the doings of rulers or the fortunes of the people or anything that could properly be called history, yet the simple record of dates has furnished something resembling a rough historical outline like the first blocking out of the marble before the features of the statue begin to take form. In order to make this clear it should

be understood that most of the inscriptions begin each with a date, and it is generally agreed that such a date refers to the erection of the monument or building on which it is found. If we could find the means of connecting these dates with our own chronology we could readily determine the actual age of any given monument; but even if this is not possible, we can at least ascertain the relative age of such monuments by comparing the dates with one another, and thus establish a definite though fragmentary chronological sequence for the ancient Maya Empire, and every new inscription containing a date will add to the completeness of this record. In its present state this chronological sequence does not take us back to the beginnings of Maya history or even afford us a glimpse of its earlier pages. . . .

The earliest unquestioned date is one found at Copan, on the western frontier of Honduras. Next we find away northward on the borders of Mexico and in the Usumacinta valley, dates belonging to a somewhat later period. Still farther northward, on the peninsula of Yucatan, the only known date belongs to a later period still. Thus whatever may have been their origin and whatever the direction of their wanderings during the days of their barbarism or before their arrival at their final home, it appears that the Mayas during their later migrations, when they lived in cities and raised inscribed monuments, moved from the south toward the north. This movement, measured from the earliest known date at Copan to the date at Chichen Itza, in Yucatan, covered a period of scarcely more than three centuries. It is not to be supposed that the movement was in the nature of an exodus and that the founding of a new settlement or the building of a new city was accomplished by the abandonment of the earlier establishment. On the contrary, the older cities continued to flourish while the movement was going on. Such at all events are the deductions arising from a comparison of dates. How do these conclusions agree with the cognate evidence? . . .

Perhaps the strongest evidence of the greater antiquity of Copan is to be found in the conditions underlying the foundations of the ruined buildings that occupy the surface. Where the river during its encroachments has torn away these foundations it has exposed to view the remains of older buildings to a depth of more than a hundred feet, and at several different levels what appear to be buried pavements are distinctly visible. In order to understand this situation it should be borne in mind that the principal buildings at Copan stand upon an elevation like a hill, with terraced slopes which distinguish its contour from that which would be presented by a natural eminence. This elevation has been assailed on its eastern side by the river with the result that I have described. The excavations made by Maudslay and by the expeditions from the Peabody museum were confined almost entirely to the upper level, but wherever these excavations were carried below the foundations of the buildings

which now occupy the surface, the same conditions were encountered, namely the remnants of walls and pavements forming a lower stratum and belonging necessarily to older structures, which must have belonged to an earlier period of occupation or at least of construction. This condition is perfectly general at Copan, and the indications point to the existence of several distinct strata corresponding to different periods of culture, and if this should prove to be the case, it is not unlikely that somewhere in the lower levels may be found the earlier forms from which the hieroglyphic symbols themselves developed. Herein lies our best hope for a key to the inscriptions.

Copan marks the southern extension of Maya dominion and, since the general movement was toward the north, the founders of Copan, it would be natural to suppose, must have come from parts still farther south, unless they came by sea from east or west. There is nothing in the countries to the south to indicate that the original home of Maya culture lay in that direction, and it cannot be said that a more satisfactory case can be made out for lands beyond the sea. It would seem therefore that the Maya culture must have been developed on the soil where its remains are found even if the germs were carried by the people from parts unknown; and in order to find the beginnings of that culture and the intermediate stages of development, we must seek them on the very sites where the higher condition was attained, and among the deposits that lie deeper than any excavations heretofore made.

It may be safely predicted that Maya dates will be found both earlier and later than any now known, and it is at Copan itself, where the earliest known date is found, and where conditions point to the first settlement of the Mayas in Central America, that the earliest records are most likely to come to light. The great need at present in connection with the study of Maya archæology and the interpretation of the inscriptions is for more material, and till this has been increased, further progress can hardly be made. Every new inscription unearthed will add to the completeness of the record and bring us one step nearer to a definite knowledge of Maya affairs. A whole history waits to be unfolded, a history that promises to be of exceptional interest to the modern world and of deep significance in its relation to the general uses of historical science.

# CHAPTER XIII

## *THE ORIGIN AND DEVELOPMENT OF MEXICAN AND CENTRAL AMERICAN CULTURE*

### I. THE MAYA CULTURE

THERE is, perhaps, no question relating to the prehistoric era of North America more difficult to solve, or that is more deeply hidden in obscurity than the origin and development of the advanced culture of Mexico and Central America; unless it be the origin of the people found occupying the continent by the first European explorers. Nevertheless, students will continue to attack the problem, and though the solution seems almost as distant to-day as it did when the early authors began to speculate in regard to it, yet some progress has been made, additional data having some bearing on the question have been obtained, and a number of theories eliminated. Though a few suggestions have received somewhat general acceptance, the opinions advanced are chiefly theoretic.

That this culture was indigenous is now the prevailing opinion of antiquaries and ethnologists, yet it must be admitted that the correctness of this conclusion has not been demonstrated, in fact, has not been established to entire satisfaction. Ever and anon papers appear in opposition, and there seems to be a growing disposition among students to reopen the discussion. Some of the reasons which have been and may be advanced, against closing entirely this side of the question may be briefly stated as follows:

As it is now universally admitted that the continent was peopled from the Old World, there would seem to be no

valid reason—where proof is wholly wanting—for asserting that there has been no entry subsequent to the original incoming. Even Dr. Brinton, who denied subsequent entry, admitted that "It was not impossible that in recent centuries some [Japanese] junks may have drifted on the Northwest coast." Yet he adds: "But their crews would undoubtedly have been promptly slaughtered; and it is only in later ages that the Chinese or Japanese constructed such junks." Without stopping to argue the points raised by this able author, it may be stated, and as we think, truly, that the reasons given to support his view are mere suppositions, and not altogether justified. The history of the first meetings of American natives with Europeans does not justify the statement that the accidental visitants "would undoubtedly have been promptly slaughtered." The first reception, where no act of violence was offered by the Europeans, was generally, in fact almost universally, friendly. Had an ancient Chinese or Japanese sage with a few companions landed on the Mexican or Central American coast, and been kindly received by the natives, as would most likely have been the case, it is impossible to say to what extent new and advanced ideas might have been diffused among the people. The Tzental tradition of the arrival of Votan and his petticoated followers presents precisely such a case.

It is a singular fact, which may be verified by anyone who will carefully study Maudslay's magnificent photographs of the stelæ at Copan and Quirigua, that the faces in these monolithic statues far more nearly resemble Chinese features than the faces of the natives, or even the faces found elsewhere in the sculptures or paintings. Compare, for instance, the faces painted on the Chama bowl (*Bulletin 28, Bureau of Amer. Ethnology*) with those of the stelæ; the difference is very apparent. However, be this as it may, no sufficient reasons exist for asserting that there were no arrivals subsequent to the original immigrations; or that there was no impress of extraneous or foreign influence in the origin and development of Mexican and Central

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Hall of columns at Mitla, State of Oaxaca, Mexico.

American culture. We may perhaps be as near the truth as on any other theory if we adopt the language of the New International Encyclopædia quoted in a previous chapter—"It is almost certain that no common origin for all of them [American races] can be assumed, but that various sources of population and centres of dispersion must be considered." Notwithstanding the preceding remarks, the civilization of Mexico is treated here as indigenous; that is to say, as being of native origin and growth. The development of the plant was on native soil; and as the proofs of foreign influence are not generally accepted, we can proceed only on the basis that it was indigenous.

As already stated, one very important factor in the development of this culture was beyond question the discovery and cultivation of maize as a means of subsistence. This will furnish an explanation of some of the customs, as, for example, the use of the metate, and the physical characteristics of the country will explain, to some extent, other customs. However, the great questions are, where did this culture begin, and to what causes shall we ascribe its peculiar features?

If we take up one line of this culture, for instance architecture, and attempt to trace the development of the different types by the monuments which are found within the respective areas of the different stocks, we shall find that our efforts will be to a large extent in vain. Although Maya ruins are scattered over Yucatan, Guatemala, and Chiapas, none of the many explorers who have studied them have pointed out any examples of rude beginnings, or any primitive forms; nor have they called attention to the various steps of development leading up to the normal types seen in the ruins. There do not appear to be in this entire area examples which can be pointed to as the beginning of this art, the first rude efforts of native builders. Violet le Duc, taking the idea from Fergusson's successful showing in regard to the origin of certain Oriental architectural types, has tried to show how the stone structures, with their

pointed arches and heavy friezes, were but copies of earlier wooden buildings. It will be evident to anyone who will examine his figures that, with the exception possibly of the mode of dividing the body, there never were Mayan structures of wood of the pattern shown. That the natives lived, to a large extent, in thatched-roof huts similar to those of the present day is conceded, and that in some sections adobe dwellings were in use, especially in the Mexican section, as in modern times, is doubtless true.

Professor Frederick Starr, in his *Notes upon the Ethnography of Southern Mexico* (Part 2), describes a house seen in some of the Maya towns of Yucatan which is peculiar, and may be the survival of an ancient type, though no remains of a similar form have been found in any of the Maya ruins. His description is as follows: "The ground form is elliptical, the long axis being transverse: there are often two doors, opposite each other, at the ends of the short axis [front and back]. The base of the house is built of stones, often slabs set on edge; the walls rising from the base are thinner than it, so that the basal part projects somewhat. The walls may be of poles and sticks daubed with mud, or they may be constructed of stones of irregular form closely set with mud; the roofs of thatch. Often two such houses stand together, one directly in front of the other; when this is so, the house in front has two doors as described, while the other may have but one."

As this type could not have been introduced by the Spaniards, it is possibly one of the forms of the ancient Maya huts, and, as it was probably built then entirely of perishable materials, it would leave no remains for examination by future generations. However, it could not have furnished any suggestion to the builders of the structures whose ruins are found throughout the Maya districts. Conventional figures of temples and oratories are found in considerable numbers in the Mexican codices, one of the Mexican day symbols being that of a house. But these give us no true idea of the actual forms of their structures. The

chief persistent characteristics in these conventional figures are the rectangular form, heavy frieze, and an apparently deep vestibule front, evidently drawn from the Mexican type.

How are we to account for the absence of earlier forms and rude beginnings among the numerous remains of Maya structures? We cannot suppose that the architectural art sprang into action in full perfection at the outset; hence, we must assume there were comparatively rude beginnings, followed by gradual development. The only probable explanation of the fact so far suggested is that when the tribes reached their historic seats they had already become proficient in the builder's art. The arrival of the Tutul-Xiu, one branch of the Mayas proper, in the peninsula of Yucatan is mentioned in one of the most authentic and reliable of the Maya traditions. As this branch of the tribe was still living in the peninsula at the arrival of the Spaniards, and nothing is known to contradict the tradition, it has been generally accepted by both early and modern authors as substantially historical.

According to the tradition, as given by Herrera and Landa, some branches of the Maya tribe were already settled in the peninsula, as at Mayapan and Chichen Itza, when these wanderers arrived. Herrera, whose language is substantially the same as the earlier author—Landa—says: "Whilst the Cocomes lived in this regular manner, there came from the southward and the foot of the mountains of Lecando, great numbers of people, looked upon for certain to have been of the province of Chiapa, who travelled forty [eighty?] years about the desert of Yucatan, and at length arrived at the mountains that are almost opposite the city of Mayapan, where they settled and raised good structures, and the people of Mayapan, some years after, liking their way of living, sent to invite them to build houses for their lords in the city. The Tutul-Xiu, so the strangers were called, accepting their courtesy, came into the city and built, and their people spread about the country, submitting themselves to the laws and customs of Mayapan in such peaceable manner

that they had no sort of weapons, killing their game with gins and traps."—(*Historia de las Indias Occidentales.*) We have quoted this passage from Herrera at this point, because of its bearing upon the subject under discussion, but shall have occasion a little further on to refer to it again for another purpose. It is evident from this tradition that the Tutul-Xiu who probably came from the upper Usumacinta valley brought the building art with them.

The only indication found in the ruins that the art was still in a partially developed stage is that mentioned by Holmes in the following statement: "Notwithstanding the success of these Maya masons in erecting buildings capable of standing for hundreds of years, they were yet ignorant of some of the most essential principles of stone construction, and are thus to be regarded as hardly more than novices in the art. They made use of various minor expedients, as any clever nation of builders would, but depended largely on mortar and inertia to hold their buildings together." And we might ask if such would not be the case now where wood is not used, if iron and steel were banished from use.

Henry C. Mercer, who has explored a number of caves in Yucatan in search of indications of early pre-Mayan occupation of the country, became convinced from the result that the Mayas were the first inhabitants who left any traces of their presence, and that they had acquired their civilization before they entered the peninsula. At least, he found no remains pointing to an earlier or different people, or people of a different culture. As we find nothing in the Maya territory showing evidences of the primary stages of their culture, our only hope of finding these indications is by searching outside of this territory along the lines of their migrations.

Gordon, as will be seen by reference to his paper, as quoted in a preceding chapter, contends that the evidence of greatest antiquity in Maya ruins is found at Copan in western Honduras. However, his reasoning on this point

seems inconsistent. It is admitted by most students of Central American antiquities, including Gordon, that it was here Maya culture reached its most advanced stage. As Gordon says truly, "Copan marks the southern boundary of Maya dominion," but he adds the statement "and, since the general movement was toward the north, the founders of Copan, it would be natural to suppose, must have come from parts still farther south, unless they came by sea from east or west. There is nothing in the countries in the south to indicate that the original home of Maya culture lay in that direction, and it cannot be said that a more satisfactory case can be made out for lands beyond the sea." "It would seem therefore," he concludes, "that the Maya culture must have been developed on the soil where its remains are found even if the germs were carried by the people from parts unknown; and in order to find the beginnings of that culture and the intermediate stages of development, we must seek them on the very sites where the higher condition was attained, and among the deposits that lie deeper than any excavations heretofore made."

It is certain that no evidences of the beginnings of Maya culture have been discovered in the regions south of Copan; and although it is true that there are reasons for believing that the Maya population of Yucatan came originally, in part at least, from sections south of it, as central or northern Guatemala, there are no grounds for the opinion that the Maya people originated in more southern sections and migrated to their historic seats from that direction. If they did not come from the south, which Gordon admits, and no "more satisfactory case can be made out for lands beyond the sea," how are we to understand his further statement that conditions point to Copan as the place of "the first settlement of the Mayas in Central America."

It is true that deeper excavations at a few points, as at Copan, may bring to light some of the steps of development in the arts, but all the indications are against the idea that

the early stages will be brought to light thereby. It would seem, however, very unlikely that we should find specimens of the earliest efforts on the precise spot where the most advanced types exist; especially when this place is on the boundary of Maya territory and on the side of that territory opposite the point of original entry; for we must so conclude, since they did not come from the south. It is toward the north, as we believe, that we must look for their original home; and it is along this pathway, if anywhere, that we are most likely to find indications of the beginning of that art which showed its development in the temples and other stone structures of Chiapas, Yucatan, Guatemala, and western Honduras.

In attempting to trace the early movement of the Mayas it is necessary, as already intimated, to consider the tribes in two or more groups; one, the southern Guatemalan branch, including the Mams, Kiches, Cakchikels, Tzutuhils, Pokonchi, etc.; the other, the Chiapanec, and northern Guatemalan group, including the Chols, Chorti, Tzentals, Tzotzils, and Lacandones. The Huasteca tribe and Mayas proper must be considered separately. We are inclined, as stated in a preceding chapter, to hold with Bandelier and some other recent authorities, that the Toltecs were, as a whole or in great part, of the Mayan stock, and our deductions are based on this assumption. This conclusion, of course, necessitates the belief that the tribes of this stock came from the north, and according to the traditions mentioned carries us at once as far in this direction as central Mexico, and points to Tulan (Tula) on the northern limits of the valley of Anahuac as the chief or at least one of the localities. However, before proceeding with the discussion of the prehistoric movements of the Maya tribes, attention will be called to certain facts bearing on the more comprehensive prehistoric movements of population in Central America.

It is apparent from what has been shown that the general prehistoric movement on the Pacific slope and through

Mexico and Guatemala to the borders of Honduras has been southward, varied only by occasional limited and local migrations in the opposite direction. But when we pass into Honduras and Nicaragua, the thread we have been following so far is lost, and we enter upon a field of greater uncertainty than any we have traversed. We can trace Nahuatlan offshoots into Salvador, the Pacific coast of Nicaragua and even into Costa Rica; we can follow Chiapanec colonies to their stopping places on the Pacific coast of Nicaragua and the Nicoya peninsula in Costa Rica, but we find in the interior of Honduras and the central and western part of Nicaragua groups of tribes which seem to be without any links connecting them in any way—linguistically, ethnically, or even in migratory movements —with the tribes north or south of them. The aborigines of Central America, if considered ethnically, would be divided into two comprehensive groups—those whose linguistic and other characteristics indicate closest relationship with the natives of South America; and those which belong by language, customs, and other characteristics to the northern continent.

The ethnic dividing line between the two continents differs widely from the geographical division. Instead of the Isthmus of Panama, or, strictly speaking, the Gulf of Darien, being the point of union, the ethnic line, as given by Carl Sapper, which seems to be approximately correct, ran at the time of the discovery from about the middle of the Pacific coast of Costa Rica, northward to the western Gulf coast of Honduras, thus including all the tribes of Panama, Costa Rica (except the peninsula of Nicoya), eastern Nicaragua, and northeastern Honduras in the southern division; that is to say, as belonging ethnically to South America.

Referring again to the tribes of the interior of Honduras and Nicaragua—known as the Lencan, Matagalpan, and Xincan (extreme southeastern Guatemala) stocks—we find them without sufficient data to aid us in deciding positively

to which of the great ethnic divisions mentioned they belong. Brinton (*Am. Race*, 161) says there are some reasons for believing that previous to the arrival of the Kiches and Cakchikels on the plains of Guatemala, that region was occupied at least by the Xincas, and if so it is more than probable that the Lencas also formerly resided in the same region. This would connect these groups with the northern great division, and indicate an original northern home. Membrino (*Hondurenismos*) has endeavored to show that the names in the Lencan, Matagalpan and Xicaque dialects are derived from Nahuatl roots; and Brinton speaks of loan words from the Nahuatl in the Xinca and Xicaque. However, the linguistic evidence does not favor the idea of relationship with the Nahuatlan group. As no traditions exist of these tribes in regard to their early prehistoric homes, we can only state that the indications point to the north as their former habitat, and that in the general southern movement they preceded the Maya tribes.

As it is known that the aboriginal population of the West Indies, consisting chiefly of Arawak tribes, came from South America, we may argue from this fact the probability that the southern element in Central America also came from the south. But the discussion of this point will be more appropriate in a subsequent chapter.

Returning now to the consideration of the prehistoric movements of the Maya tribes, in order to discover if possible some indications of the origin and development of their culture, attention is called to the fact already intimated, that in attempting to trace their early movements, it is necessary to consider them in two or more groups, starting with them in their historic seats, and going back along the lines of their incomings so far as the dim rays of light on the subject will admit. One of these groups located in historic times in southern and western Guatemala consisted of the Mams, Kiches, Cakchikels, Tzutuhils, Pokonchi and some other minor tribes; another, located chiefly in Chiapas, northern and eastern Guatemala and western Honduras,

included Chols, Chorti, Tzentals, Tzotzils, and Lacandones. In addition to these two groups, the Huasteca on the Panuco, Mexico, and the Mayas (proper) of the Yucatec peninsula and northern Guatemala must be, in this discussion, considered separately.

We are inclined to hold, as previously stated, that the Toltecs were people of the Maya stock and the ancestors of the Maya tribes, and shall proceed in our investigations on this assumption, but not without presenting some evidence of the correctness of the conclusion. This being assumed, we must look northward of the Maya historic seats for their ancient home; and accepting as our best guide the traditions mentioned, we are carried at once as far in this direction as central Mexico, with Tulan, on the northern limits of the valley of Anahuac, as the chief or at least one of the localities from which to trace them in their migrations to this locality and thence southward to their historic seats.

It is most in accordance with all the known data to assume that the migration of the Maya tribes to their historic seats was a long-continued process, the first emigrants having separated from the main body and travelled southward probably long before the final dispersion of the Toltecs (in the twelfth century) occurred. There are several items both in the traditions and archæological evidence which cannot be satisfactorily explained without this assumption.

By first eliminating from present consideration the evidently later migrations, we may limit our lines of investigation in regard to the earlier movements into their southern seats. That the migration of the Tutul-Xiu from Chiapas or western Guatemala into the Yucatec peninsula was long after other tribes had entered this section is evident from the tradition heretofore given. That the Itzas had entered the peninsula previous to and were residing there at the time the Tutul-Xiu arrived is very distinctly asserted. That a portion, perhaps most, of the Itzas moved south at a

comparatively recent date to Lake Peten in northern Guatemala, where they were found by Cortés, is known historically. Tradition and archæological data, as well as some recent authorities, agree in the conclusion that at a much earlier date the tribe, then gathered in the region of Lake Peten, sent a colony northward, which founded Chichen Itza. From what section the Cocomes and other Mayas proper of the peninsula came is not clearly stated in any of the traditions, unless, as intimated by Lizana, the chief influx was from the west. However, be this as it may, the decision of the archæologists, from the data so far obtained by explorations of the ruins and partial interpretation of the inscriptions and codices, is that the entry of Maya tribes into Yucatan was subsequent to their settlement in the Usumacinta valley and in the regions of Copan, Quirigua, and Tikal.

In regard to the migration of the southern Guatemalan tribes, especially the Kiche group, which includes the Cakchikels and the Tzutuhils, the evidence, found chiefly in the Popul Vuh, or "Sacred Book" of the Kiches, and the tradition and history recorded by a native author, and known as the "Annals of the Cakchikels," clearly indicate that they had been preceded by other immigrants of the same stock. These traditions are in part purely mythological, but have every indication of being in part semi-historical. In both it is stated that they "came from beyond the sea." In the Popul Vuh, which relates chiefly to the Kiches, it is said that the people multiplied greatly in a region called "the East,"—possibly "east" in reference to their mythological home across the sea,—and migrated to Tulan-Zuiva (the "seven caves"), where four gods were assigned to them as leaders: Tohil, Avalix, Hacavitz, and Nicahtagah. Here their language was changed, or divided, and the division into separate tribes established. It is evident from the last statement that the tradition up to this point relates to the combined family, or more likely the sub-family, group of which the Kiches formed the chief representative.

The tradition goes on to speak of their suffering from cold and of their efforts to obtain fire while they were awaiting at Tulan-Zuiva the appearance of the sun. They also suffered from famine and dampness, for the earth was moist, there being as yet no sun. During these troubles, or later when on their travels toward their final stopping place, the tradition failing to make this point clear, they were visited by an envoy from Xibalba, which is located by those writers who do not look upon it as mythical, in the region of Palenque or in the valley of the Usumacinta. They abandoned, or were driven from, Tulan, and after a tedious journey, including apparently the crossing of an arm of the sea, or some water to which the term sea was applied, they reached Mount Hacavitz. Here they rested, as they were by some means given to understand that here they should see the sun (be enlightened?). At this point the people multiplied, and built their city; their gods were turned into stone—formed into idols—and worshipped with sacrifice; and here human sacrifice began.

The tradition of the Cakchikels, preserved in their Annals, is substantially the same as regards the points mentioned, differing, of course, when tribal vanity comes into play. Their ancestors came from the land of Tulan, where they were brought forth. These Annals, however, speak of four men (clans) and four Tulans. "Four men came from Tulan; at the sunrise is one Tulan, and one is at Xibalbay, and one is at the sunset, and we came from this one at the sunset; and one is where God is. Therefore there are four Tulans, they say, oh our sons! from the setting of the sun we came, from Tulan, from beyond the sea."

The four Tulans referred to in this extract from the Cakchikel Annals are mentioned in the first part of the tradition which relates to the origin of the people, and may be considered to a large degree mythical. There are, however, repeated mentions of one Tulan which they reached after crossing the sea from the mythical Tulan where the sun sets; the former, the Tulan this side of the sea, appears by

the tradition the great and important point in their history. Numerous extracts might be given showing this, but the following will suffice: "The seven tribes arrived first at Tulan, and the warriors followed, having taken up the tributes of all the seven tribes when the gate of Tulan was opened." "The Tzutuhils were the first of the seven tribes who finished coming to Tulan." Here it is said they paid tribute of jade, silver, feather stuffs, of "articles painted, articles sculptured, astrological calendars, reckoning calendars, flute songs, songs hated of [by] you because the seven tribes paid this tribute." Some of the articles mentioned here as tribute are unusual, and it is more than probable that Dr. Brinton's translation, which we follow, is incorrect at this point, or that Xahila, the native recorder, has added items without following strictly the tradition as handed down. Again it is said, "First came the Kiche men; they acquitted themselves of their tribute in the first month; then arrived their companions one after another, by their families, their clans, their tribes, their divisions in sequence, and the warriors, until the whole of them had finished arriving in Tulan."

When we add that numerous incidents are mentioned in the Annals as occurring at and during the departure from Tulan, and that the Kiche tradition as given in the Popul Vuh confirms the statement that this place was also an important point in their migrations, there would appear to be no good reason for considering it mythical or other than some real locality which played an important rôle in the history of these tribes. Admitting that the tradition contains elements of truth and is based on facts relating to the history of these tribes, it is more than probable that items belonging to widely different dates are brought erroneously into sequence, and that the geographical features cannot be made to fit precisely into the maps of the present day, but these errors do not necessarily invalidate the traditions.

Was the real Tulan referred to in these traditions Tula the ancient seat of the Toltecs a little north of Mexico City?

Possibly not, and yet we may not be wrong in supposing it was, though possibly, the name being retained, the geographical position was changed. At any rate, the traditions refer by this name to the point of distribution of the southern Guatemalan tribes, and indicate by the features and characteristics of the country a Central American or southern Mexican region. Mention of the tapir limits the territory in North America to the region south of central Mexico. Some of the animals alluded to in the Kiche legend are found only in this southern section. Among the articles given as tribute at Tulan were green feathers, doubtless feathers of the Quetzal which is confined to this southern region. It is true that traditions are most likely to use the animal types of the country to which the people belong and not the types of their former homes. However, all the indications limit the range to southern and south central Mexico.

There are at least two items in the Cakchikel Annals which show quite decisively that the Kiche group of the southern Guatemalan tribes considered their migration as subsequent to that of other tribes and their entrance into this section as intrusive. One is the reference to Xibalba, which is treated in the traditions as a terrestrial country; the other is the distinct statement that the Kiches and Cakchikels during their migration to their historic seats passed by the Mams. As the latter tribe, since the first knowledge obtained of them by the Spaniards, occupied the extreme western portion of Guatemala, and the Kiches and Cakchikels occupied the region southeast of the Mams, the necessary inference is that the latter had reached and fixed themselves in their historic locality before the Kiches and Cakchikels had arrived in that section. The same fact makes it clear that the migration of the two latter tribes was from some section northwest of Guatemala. This agrees with the statement made by Orozco y Berra, that they (the two latter tribes) had inhabited Soconusco in remote times.

It is evident, therefore, from the data bearing upon the subject: first, that the migration of the Maya tribes into the Maya territory was by divisional groups at different, possibly widely different, dates; second, that the Kiche-Cakchikel group of southern Guatemala came into this section from some region to the northwest; third, that the migration of the last-mentioned group was after other tribes had reached and settled themselves in the Maya territory; fourth, that Yucatan was occupied subsequent to the settlement of the Chols, Chorti, Tzentals, Tzotzils, and Lacandones in their known habitats by immigrants presumably from the Usumacinta valley and northern and eastern Guatemala. This leaves for investigation the early movements of the last-mentioned tribes, in whose territory are found some of the most noted Maya ruins, as Palenque, Piedras Negras, Yaxchilan, Copan, and Quirigua.

Although the Mams reached their southern section in advance of the Kiche-Cakchikel group and settled themselves in western Guatemala, there can be little doubt that they came from the same section as the latter, and formed the vanguard of the later migration. But already Xibalba had become noted both as a place of magic and of power: a name applied, in all probability, to the people of the whole or some part of the Usumacinta valley. It is also quite evident that Votan had already appeared and brought order and culture to the Tzentals and their allies. And already, as Gordon suggests, the Chorti had reached the border of what is now Honduras.

Although there is no native tradition, save that relating to Votan, which may be said to indicate the route of the older division,—the Chorti, Chols, Tzentals, etc.,—yet monumental remains would seem to indicate that one route was southward on the Gulf side. On this route, before Palenque is reached in going south, the ruins of Comalcalco in Tabasco are seen, ruins shown by Charney to be those of structures of the same general type as the temples of Palenque. The course of movement was in all probability,

in part at least, up the Usumacinta valley, though it is quite likely, and in fact there are some reasons for believing, that one portion of this eastern group came direct to the upper portion of the valley. In any case, it is evident that we must look to southern central Mexico for a former home of at least a large portion of the stock.

That the Toltecs, who play such an important rôle in Mexican traditional history, were the ancestors in whole or in part of the Maya tribes may be fairly inferred from the following consideration. According to tradition, the Toltecs, after holding sway for a period of four hundred years, during which they had extended their control over the remotest borders of Anahuac, sank rapidly into decay, says tradition, by famine, pestilence, and unsuccessful wars, and disappeared from the land as mysteriously as they had entered it. A few lingered behind, but the last had departed, it is said, by the middle of the twelfth century. Whither had they gone? That a whole nation should have been absorbed into another nation of no greater population than itself and its identity and language obliterated cannot be believed. The Toltec language was evidently distinct from the Nahuatl, notwithstanding the statement of a few early authors to the contrary. The simple and reasonable explanation is that they passed into the regions of Chiapas, Guatemala, and the Yucatec peninsula, to be recognized there as the Mayas. Neither tradition nor history recognizes the Mayas as such in central Mexico, but they do recognize under the name "Toltecs" a cultured people strongly resembling the Mayas, who suddenly vanish entirely unless recognized in the Mayas. All the mystery disappears when we recognize the disappearing Toltecs in the Mayas.

There is also some monumental evidence to sustain this view. Dr. Le Plongeon unearthed at Chichen Itza a full-size statue, representing a person lying on his back, with his knees drawn up, his head partially raised, and his hands holding a low vase on his stomach. Now, it happens that two others precisely similar have been found in Mexico,

one in Tlaxcala, and the other near the City of Mexico. That they are intended to represent the same deity, the "Pulque God," will be admitted. Brinton, speaking of them, says: "A statue of a sleeping god holding a vase was disinterred by Dr. Le Plongeon at Chichen Itza, and it is too entirely similar to others found at Tlaxcala and near the City of Mexico for us to doubt but that they represented the same divinity." Bandelier mentions a fourth, found in the State of Puebla.

Are these several statues the work of one people having the same cult, or shall we attribute the statue found in Yucatan to the Mayas and the others to the Aztecs or allied tribes? By assuming that the Toltecs and the Mayas are one people or people of the same ethnic line, all these items drop at once into place. This, however is not the only monumental evidence pointing in the same direction. Sahagun states that there still existed in his day, among the ruins of Tula, those of an unfinished temple called "Quetzali," consisting of pillars in the shape of serpents, the heads forming the base, and fragments of these identical pillars, in all probability, have been found at this place. Now the description of these pillars as given by Sahagun when taken in connection with the sculpturing of the discovered fragments, fit so exactly with the columns of the "castle" at Chichen Itza, even to minute details, that save for the difference in size an exchange would scarcely be noticed. Finally, it may be added that a shell has been plowed up in a field at Tula on which are incised Maya glyphs. As all the data which can be obtained bearing on the question seem to drop into place without straining, when we identify the Toltecs with the Mayas, there would seem to be no good reason why we should not accept this theory.

It is probable that the traditions and ancient history of the Totonacs will furnish some aid in tracing the early Maya history. This people, among whom Cortés first landed when he entered Mexico, whose territory, known as Totonicapan



Monolithic monument at Copan, Honduras.

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is included in the present state of Vera Cruz, and adjoins the territory of the Huastecs, informed the Spanish leader, as heretofore stated, that they had resided here for eight hundred years at the coming of the Spaniards. Their traditions also go on to state that they had been an independent people up to a few generations preceding the coming of the Spaniards, when they were subjugated by the Mexicans. Also that "they had migrated, from the west and northwest, apparently from the interior, in the region near where the City of Mexico was afterward built, and claim to have lived long near the banks of Lake Tezcuco, where they built the pyramids of Teotihuacan." Torquemada, who is the chief authority for their traditions, says: "Of their origin, they say that they set out from the place called Chicomoztoc, or 'seven caves,' together with the Xalpanecs; and that they consisted of twenty divisions, or families, and although thus divided into families, they were all of one language and of the same customs. They say that they started from that place, leaving the Chichimecs still shut up there; and they directed their journey toward this part of Mexico, and having arrived at the plains on the lake, they halted at the place where Teotihuacan now is; and they affirm they built there two temples, which were dedicated to the sun and moon. Here they remained for some time, but either not contented with the place, or with a desire to pass to other places they went to Atenamitic, where Zacatlan now stands." From there they drifted further eastward, settling on the coast, where they were found by the Spaniards in 1520.

According to this tradition they must have reached their historic seats early in the eighth century, which will agree with other traditions which name them among the early immigrants. That the temples and pyramids of Teotihuacan were built by them, unless they formed a part of the Toltecs or were joined with them, may be doubted. However, they seem to have been in close relation at an early day with the Huastecs and first appeared upon the scene

with them. Although generally designated as a distinct linguistic stock they appear to be more nearly related to the Maya than to any other group, and have been by some authorities united with them. Sahagun says they claimed to be related to the Huastecs.

It seems probable from all the data that the Huastecs broke away from the Maya group somewhere in central Mexico, before the latter had divided into tribes, and with the Totonacs drifted eastward to their historic location. After this the Maya family, then known as Toltecs, differentiated into tribes, which in detached groups gradually moved southward.

To what extent these suggestions may be accepted is not important as it is evident from the data presented that the Maya tribes came from central Mexico, and were apparently identical with the Toltecs, and that they were already advanced in culture to a considerable extent. Although it is indicated that the calendar had been formed, Brinton thinks there is no evidence that it was in use among the Huastecs. As the Toltecs (whom we count Mayas) had "pinturas," that is manuscripts, it is most probable these related to the calendar. One fact, however, seems apparent, that is that the Mayas while in Mexico did not inscribe their hieroglyphic characters on stone, though doubtless they were used in their manuscripts.

By accepting the suggestions offered in regard to the ancient history of the Mayas, and their identity with the Toltecs, we are enabled not only to trace them back to an early date, but to offer a reason why we do not find in Maya historic territory their hieroglyphic inscriptions and the beginnings of other arts.

The history of the Toltecs from the time of their quitting Tlapallan, their traditional pristine home, until the destruction of Tula (Tulan or Tollan) about 1116, the date usually assigned to this event, comprised about five hundred years; one-fifth of this period, or one hundred years, is treated as the period of migration preceding their arrival at Tula.

According to the Annals of Quauhtitlan, the following eleven chiefs held control:

1. Mixcohuamazatzin, A. D. 700–765.
2. Huetzin.
3. Totepeuh.
4. Ilhuitimaitl, 889–925.
5. Topiltzin Quetzalcohuatl, 925–947.
6. Matlacxochitl, 947–982.
7. Nauhuatzin, 982–997.
8. Matlacohuatzin, 997–1025.
9. Tlicohuatzin, 1025–1046.
10. Huemactzin, 1046–1048.
11. Quetzalcohuatl, 1048–1116.

Other lists are given, but it is not probable that any of them are correct; some of the names may have been handed down by tradition, but the dates assigned are, of course, modern additions.

According to Ixtlilxochitl, not a very trustworthy writer, Tlapallan was on the northwest coast of Mexico, or even as far north as California. Payne, who will persist in calling them Nahuatlan, notwithstanding the palpable inconsistency, when, on the other hand, he considers them purely and simply the Mayas, thinks Tlapallan must be "sought for in the interior of the continent." It is evident this author goes back to British Columbia for the pristine home of the Nahuatlan tribes.

# CHAPTER XIV

## *THE ORIGIN AND DEVELOPMENT OF MEXICAN AND CENTRAL AMERICAN CULTURE—(Continued)*

### II. GENERAL

We have shown, or attempted to show, that Maya culture, in part at least, had started and to some degree developed before the tribes reached their historic localities; that in all probability the calendar had been arranged and hieroglyphic writing begun while they were yet in central Mexico, though the custom of inscribing glyphs on stone does not appear to have had its origin until they reached the Usumacinta valley in their historic territory. This, however, carries us but one step toward the solution of the problem propounded in the heading of these two chapters. This advanced culture was found not only in the Mayan and Totonacan stocks, but also in the Aztecan group of Nahuatlan tribes, in the Zapotecan, Zoquean, Chiapanecan, and Tarascan stocks, and to some extent in some tribes of the Otomian stock.

The similarity, in fact identity, in general characteristics of the calendars in use among these different stocks makes it evident that they all came from one original source. This original source was in all probability the Toltecs or Zapotecs. Thomas, in his *Study of American Archæology*, following Seler, suggests the latter, but it is more than likely that the system had its origin with the former; and such seems to be implied in the older traditions. The peculiarity of these general characteristics, which have been explained in a preceding chapter, absolutely forbids the idea that there were

parallel origins in the different stocks. As these characteristics are arbitrary and not drawn from natural phenomena, the reason for its adoption by the different stocks must be looked for in some general influence that prevailed throughout the area over which it spread.

It is apparent from the use of twenty in the calendar that when formed it was based very largely on the vigesimal system which was in use among all the tribes that adopted this time system. This fact, no doubt, had a tendency to render it acceptable, as no process of adaptation was necessary to make it accord with their numeral system; but we must seek some other influence in order to explain its spread.

As a rule, which has, perhaps, but few exceptions, especially among semicivilized, or comparatively rude people, no step in advance in art or any other branch of culture is taken until some need for that step is felt, or it is believed that some benefit will be derived therefrom. In regard to the method of counting time, two classes of persons in Mexico and Central America were interested: the priests and the tax gatherers. That the latter were the persons who helped to perfect and spread the system is not likely; they, like the people in general, looked to the priests in all matters of this kind. It is a fact well known to all familiar with the history of Mexico and Central America that throughout the cultured section the priesthood was virtually the ruling power. Though rulers nominally held the helm and acted as chiefs in control, yet behind the throne lay the directing force in the priesthood. Religion dominated to a large extent all the functions and activities of the people. The calendar was needed to time and regulate their numerous feasts and ceremonies. Once it had been invented, priests of the various tribes and stocks, finding it adapted to their purposes, would not be slow in adopting it and adjusting it to their language by giving arbitrary or equivalent names and symbols to the days and months. Seler and Brinton have endeavored to show, with considerable success, that

the names and symbols of the days in the Mexican, Mayan, and Zapotecan calendars are substantially equivalents, at least as to the idea intended to be conveyed.

The manuscripts and inscriptions are undoubtedly the work of the priests, or formed in accordance with their direction. The ruins scattered over southern Mexico and Central America tell the story of priestly influence, as they are mostly the remains of structures devoted to religious purposes and the uses of the priestly classes. Whatever may have given origin to the culture of this region, it is evident that its development was largely due to the priesthood. Ever ready to accept an increase in power and influence, to add to the impressiveness and display of their public ceremonies, and always desirous of increasing the size and magnificence of their religious structures, they pressed forward step by step, thus aiding in advancing native culture. We are, therefore, inclined to believe that the development and advance of Mexican and Central American culture was largely due to the priests. Had they opposed or been indifferent there could have been no progress. Moreover, the chief advance made is along lines intimately connected with religious purposes and priestly needs.

Notwithstanding the identity of their numeral and calendar systems, each of the different nations impressed upon its culture, though along the same lines, some peculiar feature that marked its nationality. Hieroglyphic inscriptions on stone are limited almost entirely to Mayan territory, and wherever found, whether Mayan or not, can be determined at a glance. The manuscripts, of which a new one every now and then comes to light, can readily be assigned to their proper classes by their national peculiarities.

The sharp triangular arch which forms the ceiling in Maya structures seems to have been unknown among the other nations. In the country of the Zapotecs the roofs were flat, and in some cases where the room was broad, were supported by a middle line of columns, a feature found nowhere else except at Quemada in the country of the

Zacatecas. At Mitla, in the Zapotec country, although the paintings seem to be but copies from the Mexican *pinturas*, the fret and scroll work in the stone facing of the structures are peculiar in native American architecture. The sculptures of the Pipils at Santa Lucia Cozumalhuapa, in Guatemala, surrounded on all sides by Maya architecture and Maya sculpture, show the peculiarities which distinguish them as of another nationality; the Pipils were of the Nahuatlan stock, and the bloody rites of their religion are depicted in these sculptures. Even in the calendars each nation had its own peculiar symbols, although, as heretofore stated, those for the days are thought by some authors to have had primarily the same signification.

Notwithstanding these peculiarities depending largely upon ethnic differences, the advance in culture was, in all, along the same general lines, and those lines the ones in which the priests were specially interested. Payne, in his *History of America* so often referred to, says: "The advanced aborigines of America had only one definite form of social organization—the agricultural tribe, settled under its chiefs in the pueblo or permanent village."—(ii, 39.) It is true that in the sections of advanced culture the tribes were largely devoted to agriculture, had, in fact, turned almost or entirely away from the chase, relying upon the products of the soil for subsistence. It is also true that for protection they were gathered chiefly in permanent villages, and that each village or pueblo had its chief, or ruler; nevertheless, the power behind the throne was in the hands of the priests, and Payne fails to give this fact sufficient prominence in his most excellent work. The *Manuscript Troano*, which is without doubt the work of priests, points out the appropriate time for almost every step in the cultivation of maize, even to the number of grains to be dropped in a hill; it points out also the dangers and vicissitudes to which the plant was subject.

The means by which the priests acquired this influence is not a subject for discussion here, as it applies the world

over. However this may be explained, and an explanation is by no means difficult, the only reference at present to them is for the purpose of showing the part they played in the development of a higher degree of culture. The origin of this culture, assuming that it was wholly indigenous, was, as we have seen, due chiefly to the discovery of maize and the change from the hunter's to the agricultural state. But the question where, in what section, did it have its origin still remains to a large degree unanswered. That various items of this culture had their origin in the different sections where the evidences of their existence have been observed is manifest from their limitation to these sections.

That southern Mexico was probably the area in which some of the leading items of this advanced culture, as the calendar system, originated is inferred from various facts. One of these is that it probably had its origin with the Toltecs; it is likely that in this section maize was first brought prominently into use and relied upon as the chief food supply. Again the region of Anahuac seems to have been the area where the nations met.

"What is remarkable in connexion with the occupation of the plateau of Anahuac by the Mexican tribes is, that these appear to have journeyed from considerable distances for the express purpose of colonizing it. . . . The value of the district of Anahuac as a place of settlement appears to indicate that a general drift of colonization had already become established" (Payne).

Yet the same author tells us elsewhere (ii, 477) that in Anahuac itself, the fall of Tollan (Tula) and the dispersion of the Toltecs are said to have heralded a general change for the worse. Less advanced tribes pressed onward, the barrier Tollan had interposed being removed. The sanguinary worship of Tezcatlipoca (Huitzilopochtli?) became the model of ritual; war succeeded the arts of peace as the main business of life. And in a note, after alluding to the explorations of Stephens, Maudslay, and others, he remarks that "The labours of those who are interested in these

monuments would probably be more fruitful if the groundless figment of an 'ancient and original Maya civilization' were abandoned." In other words, the so-called Maya culture should be attributed to its proper source, the Toltecs, a point in which Charney has followed out his idea perhaps a little too closely; nevertheless, we believe the idea intended is substantially correct. But writers should divorce themselves fully and completely from the view that the Toltecs were in any way or manner whatever related to the Nahuatlan stock. Had such been the case, speaking substantially the same language as the Nahuatlan tribes of Anahuac, they would have been largely absorbed by them; yet all the traditions, as given by the early Spanish writers, point to a departure. After finally leaving Tula, a part of them lingered still for a time at Cholula and then disappeared, to be known, as modern research has shown, as Maya tribes.

Dr. Brinton was not inclined to make the contrast between the cultured tribes of Mexico and Central America and some of the northern groups, as the Algonquins and the Iroquois, as great as it is considered by most students. "This culture," he remarks, "was not, as is usually supposed, monopolized by a few nations of the race. The distinction that has been set up by so many ethnographers between 'wild tribes' and 'civilized tribes' is an artificial one, and conveys a false idea of the facts. There was no sharp line. Different bands of the same linguistic stock were found, some in the highest, others in the lowest stages of development, as is strikingly exemplified in the Uto-Aztecan family. Wherever there was a centre of civilization, that is, wherever the surroundings favored the development of culture, tribes of different stocks enjoyed it to nearly an equal degree, as in central Mexico and Peru. By them it was distributed, and thus shaded off in all directions." He then proceeds to make the comparison, concluding that the difference between cultures is less than is usually estimated. "When closely analyzed, the difference between the highest and the average culture of the race is much less than has been

usually thought. The Aztecs of Mexico and the Algonkins of the eastern United States were not far apart, if we overlook the objective art of architecture and one or two inventions. To contrast the one as a wild or savage with the other as a civilized people, is to assume a false point of view and to overlook their substantial psychical equality. For these reasons, American culture, wherever examined, presents a family likeness which the more careful observers of late years have taken pains to put in a strong light."

There are in these remarks of an able writer, who has had much influence in shaping conclusions in regard to American ethnology, some statements bearing on the subject now under discussion to which we desire to call attention, as we believe they convey erroneous ideas. For instance, the attempt to minimize the differences between the culture of the Algonquins and that of the Aztecs or Mayas is strained to the extreme. Omitting from consideration "the objective art of architecture" is leaving out of view the most prominent and evident item of advanced culture of Central America. The ruined structures of Chiapas, Yucatan, Guatemala, and western Honduras are pointed to to-day as the most prominent evidence of the advanced pre-Columbian culture of these regions.

Let us make the comparison. The Mayas built admirable stone edifices, ornamented with great sculptured friezes; of the Algonquins, the Mohegans—as the author quoted asserts—built large communal houses, of wood; yet the Lenapes and most of the eastern Algonquins constructed small wattled huts with rounded tops, thatched with the leaves of Indian corn or with flags. The sculptor's art was carried to a comparatively high degree of perfection among the Aztecs and Mayas, as shown by the monoliths, images, calendar stones, inscriptions, etc.; among the Algonquins, it reached no higher grade than the formation of celts, hammers, pipes, spear and arrow points, and a few ornamental articles.

The Lenapes and Chippewas, of the Algonquins, had learned to convey information by means of figures scratched

or painted red on pieces of bark or slabs of wood; we have only to compare these with the Mayan and Mexican codices and inscriptions to note the wide difference. Brinton places the two classes on "substantial psychical equality"; yet where is the evidence that any Algonquin tribe or tribes ever planned or invented a system of any kind requiring thought or mental power equal to the native calendars of Central America and Mexico? Where can we find the Algonquin shaman or priest who could make complicated calculations reaching into millions? But further contrast is unnecessary; the able author quoted was in error on this point.

Another assertion made by this author in the above quotation is that "American culture, wherever examined, presents a family likeness." Although this is correct, it must be used in a very broad and general sense; broad enough, in fact, to include the culture of the various stocks of the American race.

Although it is true that the distinction between "wild tribes" and "civilized tribes" is in a certain sense artificial, it is nevertheless a justifiable one, and if properly used is useful and does not convey a false idea as to the facts. It is true, in attempting to classify culture, that all grades ascend from the lowest to the highest without any broad hiatus, yet, considered in groups, one portion can be classified as wild or uncultured tribes and the other portion as civilized or cultured, just as the same author classifies heads as brachycephalic and dolichocephalic, yet the dividing point between them is an arbitrary one.

The idea advanced by Payne that the tribes to the northwest of Anahuac became aware at an early day of the value of this district and that they pushed onward in order to reach it, seems plausible. It is probable the Acolhua had entered the valley soon after the arrival of the Toltecs. The paintings, however, representing the travels of the Aztecs in their journey to Anahuac at a much later date, indicate a wandering, zigzag course. However, in this case their progress

was not made in peace, as the paintings represent them as in conflict at almost every one of their many turnings. The Aztecs were in fact a ferocious, warlike people, Apaches in disposition, although it seems that when they had fought their way to the valley of Anahuac they were permitted to settle down without further contest. They were evidently weakened in power and diminished in numbers when they reached the goal for which they had been so long striving. When they had entered this cultured section they were in all probability still a comparatively savage and uncultured people, and their subsequent civilization was borrowed from the cultured tribes of the section into which they had entered. The seed which the Toltecs had planted was still producing results, though they had probably all departed from that section before the Aztecs entered it.

As the Aztec rulers cultivated the war spirit rather than the agricultural, and sought increase in material wealth by conquest and tribute rather than by labor and toil, the development of culture would be chiefly along the lines leading to more complete organization and to display. It was among this people that political organization reached its most advanced stage in America in prehistoric times.

It is more than probable that long before the Aztecs entered the valley of Anahuac, Nahuatlan tribes had pushed their way into the region northwest of the valley. Some of these, especially the more western groups, adopted agriculture to some extent as a means of subsistence, for there can be no doubt that at that early day maize was gradually making its way northward. By language, tradition, and other data, what may be called the Nahuatl branch proper of the great Nahuatlan family, can be traced northward to Sinaloa and Chihuahua, where remnants of some of the tribes are still to be found, while other tribes have become extinct. Who followed in their rear and pressed them onward? Payne is inclined to believe that the same inveterate enemies who have raided the northern tribes since the white man appeared on the scene—the Apaches and

Navahos of the Athapascan stock—harried them in the distant past as they slowly wended their way southward.

This view, it is true, is contrary to the expressed views of some of the most recent investigators of the ethnology of the southwestern section, though, as stated above, others equally as well acquainted with the data accept the earlier date of the appearance of these Athapascan offshoots in this southern section. There are some reasons for accepting the theory of an earlier date which we have not seen referred to in any of the papers or works on the subject. That the Shoshoni group came from the east side of the great range, crossing, in part at least, in the region of the headwaters of the Missouri, is now generally conceded; moreover, tradition traces them back to that region. Now we may assume, with strong probability of being correct, that the Athapascan offshoots preceded the Shoshoni. Not only has their habitat in historic times been south of that of the Shoshoni, but there is no tradition touching upon their presence at any point along their line of migration southward. Had their passage been subsequent to that of the Shoshoni, it is almost certain that some of the tribes along their route would have preserved some tradition regarding them. The fact that the chroniclers of Coronado's expedition do not mention the Apaches is not sufficient reason for considering them but recent intruders. These chroniclers do mention their kindred tribe the Navahos. As the Shoshoni had reached the Pacific coast of southern California previous to Cabrillo's voyage in 1542, and the Moqui had then been occupying their historic seat for a century or more, they must have first crossed the range toward the west at least two centuries previous to the arrival of the whites, as it would have required this length of time to have spread over the immense area they are known to have occupied. It is, therefore, not improbable that these Athapascan offshoots reached their southern habitat as early as the fourteenth, possibly the thirteenth century, notwithstanding the recent contention for a later

date. The latter opinion, when critically examined, will be found inconsistent with the general condition, distribution, and movements of tribes in this southern section at the earliest notice we obtain of it, and Payne, though speaking in round terms, may not be so very far wrong when he alludes to their having harried the Nahuatlan tribes a thousand years ago.

It is apparent from what has been presented in regard to the native inhabitants of the different districts of the Pacific section, that the section as a whole presents some features of the utmost importance in the study of the prehistoric times of North America. Brinton has noticed with special emphasis the differences between the ethnology of the Atlantic and Pacific sections; and notwithstanding his advocacy of preglacial man, and the characterization of the race in the eastern section, after giving his arrangement (*American Race*) as follows: I. North Atlantic Group; II. North Pacific Group; III. Central Group; IV. South Pacific Group; V. South Atlantic Group, he expresses his views as to the distinctions between the Atlantic and Pacific sections as follows: "There is a distinct resemblance between the two Atlantic groups, and an equally distinct contrast between them and the Pacific groups, extending to temperament, culture and physical traits. Each of the groups has mingled extensively within its own limits and but slightly outside of them. . . . As a rule the tribes of the western coast are not connected with any east of the mountain. . . . There are many other physical similarities which mark the Pacific Indians, and contrast them with those east of the mountains." In his *Races and Peoples*, he says, "All the higher civilizations are contained in the Pacific group, the Mexican really belonging to it by derivation and original locality. Between the members of the Pacific and Atlantic groups there was very little communication at any period, the high sierras walling them apart." Thomas has also shown that as wide a difference between the two sections is found in the archæological features.

These conclusions, which seem to be justified by the data, at once do away with such speculative notions as that which assumes that population spread from Columbia River over the mountains eastward to the Mississippi valley; or that the mound builders were derived from the Pueblo tribes, or the reverse. They also do away with a theory quite common some years back that the mound builders driven out by savage tribes passed into Mexico and became the civilized people of that region. There was in fact but little intercourse between the two sections, but the great plains which stretch along the east flank of the mountains was a greater barrier to intercourse than the great mountain range. It is somewhat strange that Brinton failed to observe what sad havoc the views expressed above played with his theory of characterization of the race, in postglacial times, in the Atlantic section.

Glancing over the entire western section, and noting the condition as to culture, which we have found varies to a large degree in relation to climate (latitude), food supply (whether natural or artificial) and physical environment, our attention is called to the fact that in the region of the highest culture there are seemingly included some of the most incongruous linguistic elements to be found on the continent. Here, on the one hand, is the Maya language, one of the most advanced, and one which approaches nearest to the inflectional type of any in America. On the other hand is the Otomi, which is said to approach in some respects the monosyllabic type; while in the Mexican language is seen an example of the most extreme of the so-called incorporating type. Nor could more radically distinct stocks—distinct from those named, and from each other, than the Tarascan and Zapotecan be found in contact. Yet the growth and development of the higher culture does not appear to have been impeded by these incongruities even when, as in the case of the Otomian and great Nahuatlan stocks, the groups were split asunder in this respect. The character of this advanced culture must have appealed

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strongly to the people of these diverse stocks to induce them to adopt it. However, it is evident that the chief binding chain was found in the calendar system, which was specially suited to the wants and duties of the priests.

Although writers appeal so constantly to various points in Mexican culture as examples of the advance made, yet it is more than probable that their intrusion into the civilized group, had a tendency to check for a time the further development of this culture, which their own interest and national integrity compelled them ere long to adopt. We have referred above to the check to its growth by the forced departure of the Toltecs from that section.

The very important rôles played by the Mexicans and Mayas in pre-Columbian times have so completely overshadowed the past history of the tribes of central Honduras and thence south to the Isthmus that but little has been recorded in regard to the latter, and yet a tribe of central Honduras was the only one that baffled the fierce Tonatiuh. For some reason which does not appear—possibly because they kept no records, made no inscriptions—the missionaries who were sent among them and were really the persons who brought the people to peaceful terms—failed to record their traditions or furnish any information in regard to their past history. Something, however, can be learned from their condition when seen by the first Spaniards who entered that section. The Lencan tribes, the Payas, Xicaques, and Matagalpans, of Honduras and western Nicaragua, were uncultured natives; no mention is made of stone structures, of sculptured stelæ, of inscriptions, or paintings, or of any of the evidences of advanced culture. Their little scattering villages were of mud huts or dwellings of wattled cane. Instead of being wholly devoted to maize as the source of food supply, they cultivated to a considerable extent, yams, squashes, pepper, and certain fruits. Herrera says they cleared the ground with stone axes and turned the sod with a forked pole or sharp wooden spades. It is evident from these facts that

the influence which assisted in developing the higher culture did not reach these tribes. Although it is highly probable they had passed through southern Mexico and Guatemala in advance of the Mayas, Chiapanecs, or any of the tribes of those sections, it seems doubtful whether they had brought maize into use before the pioneers of the Maya group appeared on the scene, at least to the extent of making it their chief reliance for a food supply. The influence of the West Indies appears to be noticeable to some extent among these tribes.

The stone images found on the islands, and in the vicinity of Lake Nicaragua, of which Squier has given us such an excellent description, are to be ascribed to the Nahuatlan or Chiapanecan colony originally planted between Lake Nicaragua and the Pacific, probably to the former. The Woolwa or Ulva which, with a number of other tribes, occupy eastern Nicaragua, are said to hold a tradition that they came from the northwest; though their color, physical traits and language would seem to indicate a southern origin. It is in this region that the northern and southern elements came in contact, the Chibchan tribes of Costa Rica and the Doraskean tribes of Panama pertaining to the southern group. That this is true must be admitted, be the explanation what it may. Although we hesitate to express an opinion on the subject, yet so far as can be understood from the known data we are limited to one of three conclusions: First, that man appeared in North America before or during the glacial epoch, and hence had ample time to pass into and people South America; or second, that the close of the glacial epoch was further back in the past than the recent geologists have estimated, thus giving time for peopling South America from the north; or third, that there was an original entry into the southern division as well as into the northern.

If the theory be maintained that the original and subsequent entries, if there were any, were into North America, the peopling of South America must be thrown so far back

that these movements southward in North America and northward in South America could have no relation thereto. The unity of the race forms no objection to the theory of a double entry, as there has been under this theory ample time for the physical features of the continent to impress their influence and effect upon the population: in other words, as Brinton terms it, to characterize the race. The Polynesian characteristics have been formed in much shorter time.

That the general movement on the Pacific side has been southward from the most remote times to which any available indications reach must be admitted, but very much bearing upon prehistoric times depends upon the character of that movement. Some reference to the subject has been made in preceding chapters; there are, however, some other items worthy of attention.

The tribe has been defined as "a group of families really or theoretically consanguineous, holding in common a definite food-producing district, and governed in accordance with established custom by one or more chiefs, who are considered to stand to the tribe in the same relation as the parents to the family, being at once directors and protectors." That many tribes are consanguineous, being a simple development, is certainly true, and it may be that most tribes have come into existence in this way. However, it is equally true, on the other hand, that a tribe may be composed of persons or families unconnected by blood, who have formed themselves into an association for food quest and defence. Nevertheless, the difference between the two types cannot last beyond two or three generations, as intermarriage will soon make their offspring blood relations.

Now, in studying the great movement in the Pacific section and tracing back the nations and tribes as near to their origin as possible, it is necessary to keep in mind the fact that the process was a slow one, requiring possibly thousands of years, and that, while it was going on, tribes of both the types mentioned were formed. Here a

consanguineous one, breaking away from the parent stem, started upon a pathway of its own; while, on the other hand, fragments of various tribes, separated from their congeners, grouped themselves for mutual assistance and defence, thus beginning a new organization.

That this was true to a greater or less extent may be assumed without doubt; hence, it may be that in some cases where we endeavor to trace back a tribe or group to its pristine home, we may find our efforts baffled because they are births by the way. Thus, while we may have to travel far to the north to find the origin of the Nahuatlan group, though possibly not quite so far as Payne would take us, we might not, and probably should not, if we had the data to complete the chain, be required to go beyond the limits of Mexico to find the origin of the Aztec tribe. There is little doubt that as the Algonquian tribes were gradually stretching beyond the Hudson in their movement to the northeast, several of the small tribes of Connecticut and Massachusetts were formed out of the Mohegan group. We speak, however, of the formation of tribes and not of stocks, which is evidently a much slower process.

Again, it must be borne in mind in studying this subject that the idea of uniformity of progress must be abandoned, for the normal feeling of the native population was rather a disposition to permanency than to change; and while it is true that influences were at work which caused these slow changes, it was also true that many tribes, the small ones rather than the larger, would hold tenaciously to their habitats while others passed them by. This is probably true of some of the small stocks along the California and Oregon coasts. On the other hand, it is probably true that the Nahuatlan group broke into tribal divisions in its progress southward, the integrity of the group being lost by the time it had fully entered what is now Mexican territory, or possibly before.

The numeral systems of the Pacific section present a feature of considerable interest to the student of American ethnology, not only because the subject is an interesting

one in itself, but also because of its bearing upon the relation of tribes and the indications it furnishes of former contact. From the method of counting on the hands and feet arose three numeral systems. One with a basis of five, the fingers of one hand, designated the quinary system; one known as the decimal or denary, where the basis is ten, the fingers of the two hands; and the third, known as the vigesimal or vicenary system, in which twenty, the digits of the two hands and two feet, or the whole man, is the basis. It is somewhat remarkable that all these systems are represented in the Pacific section, while in the Atlantic section, with one doubtful exception (vigesimal), the decimal system alone was in use. Why the vigesimal system prevailed to so great an extent on the Pacific side and was virtually unknown on the Atlantic side is a question that scientists are as yet unable to answer.

## CHAPTER XV

### *THE ATLANTIC SECTION—ITS PHYSICAL CHARACTER AND ANCIENT WORKS*

THE Atlantic section, according to the division heretofore mentioned, includes all that part of North America lying east of the Rocky Mountains and north of the Rio Grande and the Gulf of Mexico, except that part of northwestern British America occupied by the northern Athapascans and included in the Pacific section.

Omitting from consideration for the present the Arctic region, we note the chief physical characteristics likely to exert an influence upon the population, either physically or in regard to their customs, mode of life, and culture. The first and most important feature in which it differed from the larger portion of the Pacific section is the broad area of comparatively level land covered in great part by extensive forest growth, and supplied annually with abundant rainfall for all agricultural purposes. A second feature which doubtless limited intercourse between the two great sections and affected the lines of migration is the great belt of treeless plains which lies along the east flank of the Rocky Mountains, stretching eastward toward the Mississippi to the ninety-ninth meridian at some points and further eastward at others. These plains are almost entirely void of trees, the narrow fringes skirting a few of the streams not being of sufficient importance, except to early trappers and occasional Indian campers, to be taken into consideration. This belt, which varies in width from two to four

hundred miles, extends from British Possessions on the north to the Rio Grande on the south, a distance of twelve hundred miles.

Other important natural features which had more or less influence on the customs and distribution of the aboriginal population are the Mississippi and the great river system connected therewith, and the Appalachian range extending northeast and southwest parallel to the Atlantic coast, though the latter perhaps exerted less influence on the lines of travel and migration and the distribution of population than the chain of great lakes drained by the St. Lawrence. Some of the effects of these differences between the two great sections are readily apparent. For example, it is evident that adobe houses with flat dirt roofs will not be common in a moist climate where the rainfall is sufficient for all agricultural purposes. Nor would stone come so prominently into use among an aboriginal population where timber existed in abundance. On the other hand, the open plains, without mineral products and devoid of defensive positions, as in the Pueblo country of New Mexico and Arizona, would not be attractive to a native people without horses; at least, not until they had learned how to kill the buffaloes and to form tents of their skins. However, we know very little, in fact next to nothing, of aboriginal life on the plains in prehistoric times. Almost the only glimpse of this life is that seen by the members of Coronado's expedition in 1540–1542, and recorded by his chroniclers. Whether there were tribes in the northern portion of the treeless belt who followed and gained their subsistence from the buffalo herds, as those seen by Coronado, is unknown. There are no monuments by which to judge. So far as the physical features of the section affected the lines of migration, the plains formed the greatest barrier, greater, in fact, as will appear, than either the eastern or great western mountain range. There are few, if any, indications of lines of travel across it in prehistoric times, a few remains on Missouri River being the only ones known.

The numerous watercourses, especially the chain of lakes leading from the northern interior to the Atlantic, and the Mississippi traversing the area from the north to the Gulf of Mexico, would have a natural tendency to induce water travel, though not always forming lines of migration.

The physical conditions of the section as a whole may therefore be said to present no features, except the coast lines and the belt of the plains, calculated to determine the chief line or lines of migration. The great rivers have been referred to as marking these lines, but the mound testimony, as shown by the explorations of the Bureau of American Ethnology, do not favor this theory, so far as the Mississippi and Ohio or any streams south of the lakes are concerned. On the contrary, however, the St. Lawrence and the lakes, also the Ottawa of Canada, and the Wisconsin, appear to have been important lines of migration. There are no physical reasons why migrations in the section east of the plains might not have been in any direction. It is true that there are some lines more easily traversed than others, but there are no physical features sufficiently prominent to justify us in basing thereon a theory of migrations. In fact, it is only here and there that there are features of sufficient prominence to form natural boundary lines between tribes or people of different lineage; as, the Appalachian range, the lakes, and the larger streams.

One result of these conditions, as may be imagined, would be to allow the stronger groups or stocks to develop and extend their territorial limits, pressing the weaker groups into smaller areas and less desirable localities along the border limits; and such, in fact, was the condition when the whites first appeared on the scene.

At the time Europeans began to plant colonies in this region it was occupied by Indians belonging chiefly to some four or five linguistic stocks. The northern portion from Labrador to the Rocky Mountains, the central area east of the Mississippi from the lakes south to Tennessee, and a strip along the Atlantic coast from the Gulf of St. Lawrence

to Pamlico Sound, were occupied by the great Algonquian stock. Gathered about Lakes Erie and Ontario, both north and south, stretching down both sides of the St. Lawrence to Quebec, and extending over New York and most of eastern Pennsylvania, was the Iroquoian family, belonging to which were outlying offshoots along the southern border of Virginia and about the headwaters of the Tennessee and the Savannah. The Muskhogean family occupied most of the area embraced in the Southern States east of the Mississippi. Extending westward from the Mississippi, from its headwaters to the Arkansas, across the broad plains of the West, and occupying most of the drainage area of Missouri and lower Arkansas Rivers, was the Siouan stock, the Bedouin of North America. Belonging to this group were some scattered fragments, one along the Piedmont region of Virginia and the Carolinas, and one of small size on the southern coast of Mississippi. Besides these family groups, there were also the Caddoan stock, chiefly in western Louisiana and eastern Texas; the Timuquanan, occupying the Florida peninsula; and some small groups covering limited areas chiefly about the mouth of the Mississippi.

The relative areas and geographical positions of these are shown in Major J. W. Powell's linguistic map accompanying the *Seventh Annual Report of the Bureau of Ethnology*. A study of this map alone, without reference to other data, would lead to the belief that the stocks were developed in the respective areas they were at first found occupying. With the exception of some separate colonies of the Siouan, Iroquoian, and Caddoan stocks, the territory of each stock is continuous; and even in the case of those having colonies, the great mass occupies continuous territory. We study the map in vain, however, for any indications of former prehistoric relations; although these might, if we could glance back over the ages, appear kaleidoscopic, the map shows but one of these views, the last preceding the changes brought about by contact with the whites.

If we accept Latham's law of ethnic extension in relation to language,—that the greater the area over which a given language is spoken with little or no variation in dialect the more recent is the extension of the population which speaks it,—we should suppose that the spread of the great families over the eastern section was more recent than the settling of the numerous stocks on the Pacific coast of California and Oregon.

A comparison of the physical features of the Atlantic and Pacific sections, especially the south temperate and tropical portions of the latter, would lead us *a priori* to a probably correct conclusion as to the effect of the differences on the culture of the natives of the former section. In a forest region consisting largely of deciduous trees, game will be of greater variety, more abundant and evenly distributed, and more persistent than in a comparatively treeless region largely composed of arid areas, with comparatively few perennial streams. In the former, where the land must be cleared of forest growth before the cultivation of the soil can be carried on, the chase will be relied upon for a food supply, until the increase in population compels resort to agriculture. As a natural consequence culture is less rapid here than in the seemingly less favorable section, and mostly along somewhat different lines. Timber supplying all the material for their dwellings and other structures, there was no inducement to work in stone and thus develop the mason's and sculptor's art. Payne, commenting on this subject, writes as follows:

"No part of the earth's surface is less favorable to the advancement of man, in any stage in which he has been hitherto seen, than the tropical forest. But the forest of the temperate zone affords, even under primitive conditions of life, some direct inducements to progress; and none is more favorable to advancement, when man has attained to the full use of iron implements. If, therefore, it is found that the forest regions generally are less favorable to his early advancement than those which are unforested, this

condition will apply with the greatest force to the tropical forest."

The active hunter's life is, as we may justly infer, and, in fact, as experience has shown, conducive to the growth and development of the warrior class rather than of a dominant priesthood, though superstition has such a strong influence on the savage mind that it sometimes manifests itself in spasmodic developments of widespread effect, as the "ghost dance" in recent years.

It is in this section that Dr. Brinton placed the characterization of the race, as mentioned in Chapter V, where his statement in regard to the subject is quoted. Although he was a strong believer in glacial man, he places this change in the postglacial era, and hence, as regards the deductions which may be drawn from the data relating to the events, movements, and changes which followed, leaves them substantially upon the same footing as if the continent had been peopled in postglacial times. This characterization, as the author quoted states, was a slow process; hence, the movements which followed would not have been far different in time from those starting from the original landing point, supposing man had entered subsequent to the glacial era; therefore, traditions and other indications will be as applicable and legitimate on the one supposition or theory as on the other.

It is from this "area of characterization," Brinton holds, that population was distributed over the continent, as he expressly states in the language quoted that, "so far as we can trace the lines of most ancient migrations, they diverged from that region." If we examine this theory, which has had considerable influence in shaping opinion in regard to the prehistoric movements in this region, it will be seen upon what a slender and, in fact, untenable basis it rests.

Neither of the three reasons given by the author mentioned are of any force save to the advocate of glacial man. "It is there," he remarks, "we find the oldest signs of man's residence on the continent," alluding, of course, to

the finds in the Trenton gravel which, as we have seen, have been to a large extent discredited by subsequent investigations. His second reason, that this section "was geographically the nearest to the land areas of the Old World," is not true, nor would it be of any force, on the theory of glacial man, were it true. His third reason—"so far as we can trace the lines of most ancient migrations, they diverged from that region,"—cannot be sustained by the facts, and is virtually nullified by the author's own statements in other parts of the work quoted.

According to this theory, the chief line of migration, that by which South and Central America would have to be populated, would be down the Gulf coast, through Texas, eastern Mexico, and so on southward. Yet so far as the line north of central Mexico is concerned, there are neither traditions, monuments nor any other evident indications that there ever have been any migrations along it either southward or northward. There are few natural lines in all North America which seem to have been less frequently traversed than this. The same author, elsewhere in the work quoted, holds with other philologists that the southern Athapascan tribes,—Apaches, Navahos, Lipans, etc.,—migrated to their southern homes from the parent group in the cold region of northern British Possessions. He holds, also, the same view as that which has been presented herein, in regard to the general movement southward on the Pacific slope. A little thought will suffice to show that this general and long-continued movement southward on the Pacific side, a movement which reaches back to the utmost extent of tradition and other available data, is wholly inconsistent not only with Brinton's theory but with any theory of glacial man. Such movement under either theory is without meaning and inexplicable.

As there were no stone structures of more importance than walls a few feet high, and of moderate size, built wholly of unhewn stone, the ancient monuments of this section are comparatively simple and mostly of earth. The

dwellings and all other structures of the native inhabitants, being of wood or other perishable materials, left no remains to tell of their existence. Notwithstanding these facts, the opinion expressed in the days of Jefferson that our country contained no ancient monuments worthy of the name has been shown by abundant evidence to be incorrect. The works of an aboriginal population are scattered by thousands over the broad areas from the eastern border of the great plains to the Appalachian Range, and from the Gulf to the Ottawa River in Canada.

The monuments, or local antiquities, of this section consist chiefly of earthworks, stoneworks, graves, cave deposits, and mines and quarries. They may, with few exceptions, be included under the following types: mounds, refuse heaps, enclosures, hut rings, excavations, graves and cemeteries, garden beds, hearths or village sites, and ancient trails. Besides these, there are mines and quarries, cave deposits, petroglyphs, and canals.

Although the differences between some of these types are slight, yet they are of importance to the archæologist. The term "mound," when limited to its true sense in archæologic usage, refers to the tumulus or artificial hillock cast up with some special object in view, and not to a mere accumulation of débris. These vary in form from the simple conical tumulus to the quadrilateral pyramid sometimes with a broad apron-like extension. Nor does the variation cease with this form; the aborigines, desirous of rendering their totems prominent, have in some instances given to their mounds the animal forms of these totems; these, which are usually designated "effigy mounds," are a local type, being confined almost wholly to Wisconsin and the immediately adjoining areas.

Thomas, who is the leading authority on the mounds of this section, whose works we follow, classifies the mounds as conical tumuli; elongate or wall mounds; pyramidal mounds; and effigy mounds. Of these the effigy mound, as stated, is a local type, as is also the elongate or wall mound,

which is confined strictly to the effigy area. The latter are lineal earthen structures, distinguished by their wall-like appearance, and in truth the longer ones might be considered walls if reference were to form alone. They vary in width from twenty to forty feet, and are seldom seen of greater height than four feet, the usual height being from two to three feet. The shortest are from fifty to seventy feet long, but the usual length is from one hundred and fifty to three hundred feet, and occasionally there is one nine hundred feet long.

These two mound types are of considerable interest to archæologists not only because of their abnormal character, but also because of their local limitation, and the supposition that the effigy mounds were totemic symbols. It was usual among the American aborigines for a clan or gens or social organization to adopt,—generally through some chance happening,—some animal or other object in which their guardian spirit was supposed to dwell. Although the supposition that the effigies are to be considered as totems is yet unproved, it seems to be the best explanation that has been presented. There is one fact, however, which seems to be evident; that is, they were not intended, or used as burial places, hence some other purpose must have been in view in building them. They are mostly found along the streams or in the vicinity of lakes; in some instances, along Wisconsin River and some of its branches, quite a number of bird effigies occur—in one locality, all have their heads pointing down stream. A writer describing one of these groups, speaks of it as a "flock" of huge birds suddenly stopped in their flight and turned to earth. This multiplying of a totemic form by a tribe would seem to be unnecessary labor.

The animals which these mounds represent are, so far as they can be determined, those known to the modern fauna of the region in which they are found. The supposed elephant mound has been shown by the investigations made by J. D. Middleton of the Bureau of American Ethnology to

have been intended, in all probability, to represent a bear, the addition of a proboscis having been accidental and temporary. Although these mounds are found chiefly in the situations mentioned, they sometimes occur on quite steep slopes, and, in a few instances, on the summits of sharp ridges, so narrow as to necessitate lapping the effigy over from one side to the other. Outside of the area mentioned —Wisconsin, or rather the southern half of Wisconsin, and the immediately adjoining portions of Iowa and Illinois,— the only other mounds of this type known are two or three in Ohio, and two bird mounds in Georgia.

It might be supposed from their singular forms and the limited area to which they are confined that they belonged to a different era from that to which the other mounds of the Mississippi valley belong. This, however, the explorers— Lapham and the members of the Bureau of American Ethnology—inform us, is completely negatived by abundant evidence that they belonged to the same age as the other mounds with which they are associated. The effigies are so closely linked with the ordinary conical mounds and other ancient works of the district as to forbid the idea that they pertain to different races or different eras.

Although the questions: Why have these peculiar mounds been limited almost exclusively to the southern portion of Wisconsin and the immediately adjoining portions of Illinois and Iowa? and, why have the tribes of this section alone constructed such anomalous forms? have puzzled antiquaries and have as yet received no satisfactory reply, still there are two items concerning them which limit the investigation. Lapham has shown by evidence which seems to be indisputable that mound building in this district was not discontinued until the white man had made his way hither. Another fact is that there is clear and positive evidence that the custom of forming effigies on the surface of the ground continued far into post-Columbian times. This survival is found in certain animal, human, and other figures outlined upon the surface of the ground with granite boulders, and

even occasionally with buffalo bones, usually upon elevated positions and sometimes on the tops of the highest buttes. These outline figures have so far been found almost exclusively on the plains of the Dakotas, in the Sioux country, and are attributed to the people of this group. If the mounds of this type in southern Wisconsin and the immediately adjoining section of Illinois are to be attributed to people of the same stock as the evidence indicates, we then have proof that some of the tribes formerly dwelt as far south as what is now northern Illinois. It is true that this conclusion is largely theoretic, yet it is in line with all the indications we have on the subject.

The elongate or wall mounds, which are confined to the effigy district, are mixed in the effigy groups as if having some relation thereto. From the fact that they are frequently placed in parallel lines, it has been suggested that they were connected with game drives. As their height is but slight, it would have been necessary, if used for this purpose, to have built a brush screen along the top, which would have been as effective without the mounds as with them; moreover, they frequently stand obliquely or at right angles one to another, and are sometimes found extending up and down very steep slopes. They are simple lines of earth cast up from the adjoining surface soil, but with what object in view, and for what purpose, is unknown; however, they are seldom used as burial places, and even when so used it is apparently an afterthought.

Another peculiar type of earthworks confined to this same area includes what are known as chain mounds. These consist of a series of rather small conical mounds arranged in a line, generally straight or nearly so, and connected with one another by low embankments. These are usually somewhat evenly spaced, and, judging from the results of some excavations made in them, are presumed to have been house or wigwam sites. Having stated above that the indications seem to point more directly to the Siouan tribes as the authors of the effigy mounds, we may add that one of the

groups of mounds, containing lines of chain mounds, is in precisely the locality that the Winnebago Indians, a Siouan tribe, are known to have occupied for a time.

When the whites first obtained a knowledge of this northwestern section through Perrot and other early French adventurers and missionaries, the southern portion of what is now Wisconsin was occupied chiefly by Algonquian tribes; the Siouan tribes, with the exception of the Winnebagoes, who dwelt in the vicinity of Green Bay and Lake Winnebago, had retired or been driven to the region about the headwaters of the Mississippi and further west. If the theory advanced that the Siouan tribes were the authors of the effigy mounds be accepted,—for Algonquian tribes, with one or two exceptions, do not appear to have been mound builders,—we shall be able to trace a portion of the stock back to an early home, which we shall find fits in well with one of the oldest and most reliable traditions of the stock.

Having referred first to these anomalous mound types because they are anomalous and confined to a limited district, we turn now to the more common types. The conical form is the most common type of the entire section, and is found in all localities where mounds occur, there being but few groups even in the effigy area in which they do not occur. The conical tumulus may be described as an artificial hillock, usually of earth, cast up with some special object in view, for some particular purpose, and not a mere accumulation of débris. The form is usually that of a broad, round-topped cone, but, as at present found, is, in consequence of wear and tear by the plow and the elements, often so irregular in form as to be distinguished from the refuse heap only by internal evidence. The reason for describing so particularly so simple a structure as a conical mound is to emphasize the use of the term "mound," which has been applied so loosely by writers. Here it is limited strictly to the tumulus of the types mentioned.

The mounds of this type vary in size from a slight swell in the ground, six or eight feet in diameter, to a cone eighty

or ninety feet in height and three hundred feet in diameter at the base. Most of the burial mounds are of this form. The typical pyramidal mound is the truncated, quadrangular pyramid; a few, however, are circular or oval, and occasionally one is found irregularly pentangular, but they are distinguished from the conical type by the flat top or truncated form. In some instances, as in the group at Marietta, Ohio, they are so reduced in height, compared with the size, as to appear as earthen platforms. One important feature found in some mounds of this type is a terrace or apron-like extension, running out from one of the sides, and in a few instances from two sides. In some cases where the slope is steep, a ramp or roadway, starting out some distance from the base, leads up to the summit by a gentler incline. Although the outlines must have been distinct and well defined when they were built, the wearing of the plow and elements has obliterated these outlines to such an extent as to render it difficult to determine the original form. According to the investigations of the members of the Bureau of Ethnology, mounds of this type are limited almost exclusively to southeastern Missouri, southern Illinois, Arkansas, Kentucky, Tennessee, South Carolina, and the Gulf States.

As a general rule, pyramidal mounds are larger proportionally than those of the conical type; the largest mound of the entire section is one of this type in the Cahokia group in the Mississippi bottom, on the Illinois side, a few miles east of St. Louis. This immense pile, which rises directly upward from the level bottom, showing beyond question its artificial character, reaches the height of just one hundred feet, measurements varying from ninety-nine to one hundred and one feet. The area covered by the base is about eleven acres, or equivalent to about seven hundred feet square. The total contents are estimated at somewhat over eleven million cubic feet. At the height of some forty feet a broad terrace extends outward about a hundred feet. It was on this terrace, about the commencement of the last century, that a body of La Trappe monks made for a time

their abode. The surrounding area shows very distinctly where the material was obtained for this great structure.

As the group of mounds at this point is a large one, containing, besides those of the conical type, quite a number of the pyramidal form, the tribe which erected them must have been a strong one; yet, with no means of digging up the soil except their wooden spades and stone hoes, it must have taxed its people to the utmost to build up this great heap. The one next in size east of the plains, so far as known, is the chief mound of the Etowah group, near Cartersville, Bartow County, Georgia. This is some sixty-one or sixty-two feet in height, and covers an area of about three acres. The contents in this instance are estimated at four million cubic feet.

As the Indians had no beasts of burden, the material of these mounds must have been carried by individual loads, in baskets, cloth,—for they had a kind of cloth,—or in some other way. This is not a mere supposition, as parties engaged in making excavations have noticed in several instances the lumps or little masses of earth which formed the original loads by which the mounds were built up. This was, of course, slow work, and causes us to wonder how the Indian community, where there were neither slaves nor despotic control, could be induced to devote attention to this particular work for a sufficient length of time to complete it. Gerard Fowke, who has had much practical experience in excavating mounds and investigating the mode of construction, concludes that an earthen mound one hundred feet in diameter at the base and twenty feet high, of the conical type, could be constructed, under ordinary circumstances, in forty-two days by one hundred persons. As the earth is obtained immediately about the base, it is assumed that each individual could carry twenty-five loads, averaging half a cubic foot, in a day.

It might have been possible, through religious fervor, the influence of the shamans, or in memory of some noted chief, to hold an average of one hundred persons, including

women,—for much of the burden would fall on them,—for the space of forty-two days and erect a mound of the dimensions given by Fowke; but when it came to casting up a heap the size of the great Cahokia tumulus, where, at the same rate as in the former calculation, it would require one thousand persons for two years and a half to complete the structure, this, so far as we can judge of the Indian character, would have entirely exceeded their patience. We conclude, therefore, as we assume that Indians were the authors of the mounds, that this and other large structures were thrown up at intervals. That Indians were the authors of these works is now generally conceded; nevertheless, evidence to this effect will be presented in a future chapter.

Although mounds of the pyramidal type were sometimes used as burial places, their chief use was as elevated foundations for temples, chiefs' houses, and other similar structures. This conclusion is not a mere surmise, for historical evidence of the fact is on record. The mound of the Etowah group, Bartow County, Georgia, referred to above, is, beyond any reasonable doubt, mentioned by one of the chroniclers of De Soto's ill-starred expedition; and it is expressly stated that the chief's dwelling and other houses stood on the top, and that De Soto and some of his officers passed the night there. It was from the top of a mound in Arkansas, where De Soto was passing the night with the local chief, that he administered a severe rebuke to one of his officers, who was creating trouble in the camp. Moreover, it is expressly stated by one of these chroniclers that the Indians of Florida, meaning the Gulf States, erected mounds for the purpose of placing the chiefs' houses thereon. At Chicaza, the chief village of the Chickasaw tribe, in what is now northern Mississippi, De Soto found the chief's house placed on a mound, the top of which was reached by a kind of stairway.

Several instances occur where the main pyramidal structure is surmounted by a small conical tumulus. One or two with this addition occur in Ohio, one in southwestern

Indiana near Evansville, in which instance there is a broad terrace stretching out from one side of the mound. Another example is found in southern Illinois, and others in southeastern Missouri and in Arkansas. These small tumuli are, for some unexplained reason, almost always placed on one corner of the chief mound. If intended as a lookout station, the proper position would seem to be in the middle of the larger mound; however, they would be of little value for this purpose in any position. It is probable that the idea that mounds were built for lookout purposes is erroneous, as it has never been the custom of Indians, when on the watch for foes, to endeavor to show themselves.

There are some mounds, intermediate in form, not belonging strictly to either of the classes named. Some of these, found chiefly in southeastern Missouri and Arkansas, may perhaps, as Thomas suggests, be considered as pyramidal mounds with rounded tops. They appear most prominently in the large group, known as the "Rich Woods Mounds," in Stoddard County, Missouri. The swampy region in this section of the state appears to have been a favorite resort of the mound builders, who located their villages on the low, sandy ridges which traverse the swamp. The Rich Woods group, which extends for about a mile along the margin of one of these ridges, must at the time of its occupancy have been an important village.

Near the centre of the group is quite a large mound, twenty-six feet high at the highest point, and is obscurely pentangular, and the top slightly convex; on the east side a ramp or elevated roadway, starting a few feet below the summit of the mound, descends regularly and somewhat gradually for a hundred and fifty feet or more to another flat-topped mound, or, more exactly, to what appears to be a landing or halting place. One of the explorers, describing this group, says that, standing on a lower mound and looking up at this large mound and ramp, he could not avoid the impression that here the builders performed their religious or superstitious ceremonies, the priests marching down from

above to this halting place before descending to the people below. The ramp is neither a true terrace running out level nor a true ramp formed as a graded way for ascent and descent, but merely an elevated roadway. Passing down from the level halting place, a lower embankment leads on the left hand to a low circular mound, and on the right to a long oval mound eight feet high, over two hundred and sixty feet in length and one hundred and ten in width.

The connected mounds above described are not the only ones so connected in this group. Another series of three flat-topped mounds, two of which are of considerable size, the longer diameter of each being over two hundred feet, and the height respectively eight and nine, are connected by low embankments. The third, the smallest of the group, is connected by a slight ridge to the end of one of the larger two. There is a third instance in this group where mounds are connected, but in this case only two are arranged in this way. A possible explanation of this unusual feature in the south, where the mounds are comparatively large and of the pyramidal type, is that some of those so connected supported the houses of the chief, and the council houses; and others the temple; and that the level area was subject to flooding in times of high water. The embankments connecting those devoted to the same purpose afforded a means of passing from one to the other at such times.

It is asserted by one of the chroniclers of De Soto's expedition that one reason for building mounds in districts subject to overflow was for the purpose of raising the dwellings above the flood. Garcilasso de la Vega, speaking of the inundation which occurred when Moscoso was preparing to go down the Mississippi, says that the waters broke into the inclosure and surrounded all the works (mounds) they were occupying so that they had to pass from one to another in boats.

There occurs in Arkansas a type of mounds which does not appear to have been noticed until brought to light by

the agents of the Bureau of American Ethnology. These are described as low, flattish, mostly circular, mounds from one to five feet high, and from fifteen to a hundred feet in diameter. In those which have been excavated the stratification has, as a general rule, been found to be as follows: First, a top layer of surface soil, from a few inches to a foot or more in thickness; next a layer of burned clay from four to eight inches thick, and broken into lumps, seldom in a uniform unbroken layer; immediately below this is always a layer of ashes and charcoal, in which are usually discovered fragments of pottery, and occasionally whole vessels, stone chips, broken bones of animals, and other refuse material; immediately below this is sometimes a layer of hardened muck or dark clay; at this depth, which is usually below the original surface of the ground, there is often found, in the eastern part of the state, a skeleton or sometimes two.

The burnt clay fragments sometimes contained impressions of grass and burnt twigs, and in some instances were ornamented on one face by being stamped with an implement made of split reeds. That this burned clay was plaster from the houses of the mound builders, became evident from the remains of upright posts and cane lathing forming the walls of the building. From the data obtained the explorers were able to determine that these low flat tumuli were domiciliary mounds; and that the remains found resulted from the following custom. First an earthen platform two or three feet high was formed on which was placed a dwelling. A death occurring in the family, the body of the dead was buried in the dirt floor; the house was then burnt over the grave; and the charred ruins immediately covered with earth. It was a practice of some Indian tribes to bury their dead in the floor of a dwelling and then burn the house.

## CHAPTER XVI

### *THE BURIAL MOUNDS*

ALTHOUGH the burial mounds are chiefly, though not exclusively, of the conical type and generally simple in form, conveying thereby no indications of the characteristics or customs of the people by whom they were built, yet, when they are excavated and the internal structure and contents exposed, they reveal more in regard to the habits, beliefs, art, and daily life of the authors than can be learned from all their other works combined. From them we are even enabled to learn something of their ethnic traits. The gifts to the dead deposited in these tombs not only illustrate their arts and customs, but enable us to judge of the culture-status of the people, and the remaining evidences of their modes of burial and sepulchral rites afford some glimpses of their religious beliefs and superstitions. The larger and more imposing works, as pyramidal mounds, enclosures, etc., furnish indications as to the numbers, condition, and character of the people composing the tribe; but the contents of the burial mounds, besides the evidences they furnish in regard to the religious belief and art of the builders, tell us something of individual traits, something of their social life, their tastes, their personal regard for one another, and even something of the diseases to which they were subject.

Some attempts have been made by means of the forms and types and the internal contents of the burial mounds to outline the archæological districts supposed to accord with

the ethnic divisions of the prehistoric population. The result, however, has not been satisfactory; hence, each author who devotes attention to a particular class of artefacts, or types of monuments, outlines the districts by the distribution of the types of the particular class he is studying. One or two districts, such as the effigy mound area, where the works are peculiar, and the Iroquois section, where the types of monuments are unusual, can be outlined with reasonable certainty, but further than this there is no general agreement.

The internal arrangements of the mounds, modes of burial, and contents are so varied as to baffle all attempts at classification; therefore, only the more common and important types can be referred to. One type very common in Wisconsin and other parts of the Northwest, which also occurs occasionally further south, as in Calhoun County, Illinois, and in Arkansas, is where a slight excavation, not a grave or pit, is made in the original surface of the ground to receive the body or bodies, or, in the northern section, skeletons, more likely, as in many if not in most cases of this type in this section the flesh has been removed before burial and the lower limbs drawn up or the bones disarticulated and bundled, or stretched horizontally and the earth heaped over them. In this mound type there was no covering of bark, timber, or stone placed over the body or skeleton; but it was not unusual, where the body or skeleton was extended, to form the first layer of tough clay. Sometimes the entire mound consists of this hard clay layer. It is very probable that in many cases where it is said the body was in a sitting posture, that it really was a bundled skeleton, as it was customary in such cases to place the skull on top; hence, it was thought that, the flesh having decayed, the bones sank into a heap. This habit of burying the skeleton was practised to some extent in various parts of the mound area. Aside from what is mentioned historically on the subject, the explorers of the Bureau of American Ethnology ascertained that the so-called pigmy

graves, like those of Tennessee, which excited so much attention early in the last century, were only instances of skeleton burial where the bones had been disarticulated and placed in a small compass.

The rudest and simplest type of mound burial was, of course, where the body was laid on the surface of the ground and the earth heaped over it. Dr. Lapham, who devoted so much attention to the effigy mounds of Wisconsin, and whose work is still the standard authority on the subject, found that the small conical burial mounds of this section were frequently of this type, many, however, being of the type mentioned above. Some instances have been observed, in Ohio and West Virginia, where the surface of the ground was first smoothed and packed; over this was spread a floor of bark, on which was sprinkled a layer of ashes—white hickory ashes, one explorer says, were used in the instances of this kind that he noticed.

Reference in the preceding paragraph to ashes found in mounds calls attention to the use of fire in the burial ceremonies of the mound builders. The fact that ashes and charcoal are found in many, in fact, we might say most, of the burial mounds in all parts of the mound area has caused much speculation in the past. By some authors it was taken as evidence that the people who erected the mounds offered human sacrifices to their deities. By others it was assumed—with greater appearance of being correct—as an indication of cremation, at least of class cremation. The presence of charred human bones amid the ashes and coals in quite a number of mounds in different parts of the division was supposed to be readily accounted for by the theory of cremation. This view was held by Sir Daniel Wilson, and also by Dorman who remarks, "cremation appears to have been the usual method of disposing of the dead among most of the northern tribes." (*Orig. Prim. Superst.*, 171). Thomas, however, who has studied the subject with considerable care, is not inclined to believe that cremation was habitually practised by the mound builders or by any of the

tribes of the Atlantic division, though fire was very generally used in burial ceremonies. A summary of the reasons for this opinion and for rejecting the idea of human sacrifice may be briefly presented as follows:

The assumption that human sacrifice was practised and that fire was used, when all statements and cases referred to are carefully examined and traced to their origin, is found to be based, aside from the presence of ashes and coals in the mounds, on the very common practice among the Indians of torturing their prisoners with fire and in some cases burning them at the stake. During the explorations of one of the agents of the Bureau of Ethnology a place of such torture and burning was found on a mound. The charred remains of the stake and the layers of ashes and coals, with small fragments of bones, were there. That the inference drawn was correct happens, in this case, to be confirmed by history. The mound was on Little Tennessee River, in one of the Overhill Cherokee towns, and Ramsey mentions the fact that a victim was taken to this mound to be burned, as was the custom, but fortunately was in this instance saved after being bound to the stake. The statement by Haywood that "there are many evidences of the practice of human sacrifice among those tribes living on the Ohio, Cumberland and Tennessee rivers" is seen, when his work is examined, to be only an opinion based on what is found in the mounds of these regions.

However, the opinion that cremation was practised by the mound builders of the Atlantic section appears to be without any basis of fact. The custom was followed by some of the tribes of the Pacific coast, but not, so far as known, by any of the tribes of the Atlantic division. Du Pratz says: "There is no nation of Louisiana which follows the custom of burning the body."—(*Hist. Louisiana*, 1758, iii, 24.) Louisiana as used here included all the Mississippi valley south of Ohio River, and all the Gulf States except Florida. Pickett says that when the Choctaws buried the skeletons which had accumulated in their bone

houses, after placing them in a heap, they threw charcoal and ashes over them before covering them with earth. He suggests that this may have been done for the purpose of "preserving the bones"; but it is far more likely that it had some religious or superstitious significance.

It has very often been found in excavated mounds in various parts of the country, though more frequently in the northern districts, that after the body or bodies had been buried and a layer of mud or clay, or in some cases a mortar-like substance, spread over them, a fire, usually of brush and leaves, was kindled over this. Sometimes this was extinguished before it had burned out by dirt being thrown over it. Occasionally, however, the fire was so fierce and the clay or mortar layer so thin and defective, that the bones beneath were more or less charred. In some cases where the body had been covered with timber and a layer of dirt thrown over it without sufficient care fully to cover the timbers, the fire has reached the timbers and burnt through them and partially consumed the body or skeleton. While hundreds of cases have been observed where fire has been connected in some way with the burial ceremonies, there is, with one doubtful exception, no evidence indicating intentional cremation. That Indians in modern times occasionally used fire in a similar manner in their burial ceremonies is evident from the following statement by Robert H. Poynter, of Desha County, Arkansas, in the *Smithsonian Report for 1882*. He says that Wal-ka-ma-tu-ba, an old Indian, was buried in 1834 in the following manner:

> The house in which the family lived was built of round logs, covered with bark, and daubed with mud. In the middle of the house a board was driven about three feet into the ground, and the old man was lashed to this with thongs, in a sitting posture, with his knees drawn up in front of his chin and his hands crossed and fastened under his knees. The body was then entirely incased in mud, built up like a round mound, and smoothed over. A fire was kindled over the pile and the clay burnt to a crisp. Six months afterward the family moved away and the mound was opened. The body was well preserved.

It may be stated in regard to the position of bodies in mounds that, as a general rule, no special reference to the cardinal points or to one another appears to have been observed. As evidence of this, in some of the mounds of east Tennessee which contained numerous burials the bodies lay in every possible direction; in one case where there were sixty-seven skeletons, the only indication of design in respect to position was that the heads somewhat inclined toward the centre of the mound, where there was a series of small circular fire beds one above another forming a shaft. In a few mounds the bodies were placed regularly side by side, with the heads all one way; in one or two instances there were two groups of bodies of which the heads in one group were in one direction and in the other in exactly the opposite direction, but in no case did it appear that there was any reference to the cardinal points. In order to show the disregard to the cardinal points it is necessary only to state that in a mound in the same county as the one containing sixty-seven skeletons mentioned above, two skeletons lay with heads west; directly opposite, feet to feet, were two other skeletons with heads east, and at right angles to the four, feet to feet, were two skeletons, one on each side, one with the head north, the other with the head south. In another part of the same mound were four skeletons with the heads southwest.

We have seen that in some instances the bodies were placed in an excavation, and in other cases laid upon the original surface of the ground. Another method occasionally resorted to was to place one or two layers of earth, clay, or sand on the original surface, and lay all the bodies on these or in the layer above. In one instance where the mound was large—fourteen feet high and two hundred and twenty feet long and containing many skeletons—the level bottom layer of sand slightly mixed with clay was five feet in depth. All the skeletons—ninety-one—were found at various depths from three to nine feet in the earth above this bottom layer in which there were no burials.

In other instances, all the burials were in the lowest stratum.

This mound mentioned above as containing sixty-seven skeletons was circular in form, one hundred and eight feet in diameter and eleven feet high, and flat on top. Extending out from the western side was a large terrace eight feet high, over five hundred feet long, and widening out in the middle to three hundred and eighty feet. In the centre of the mound was a series of small saucer-shaped fire beds, four to eight feet in diameter, placed one above another, forming a central shaft. The strata forming the mound, counting from the top downward, were as follows:

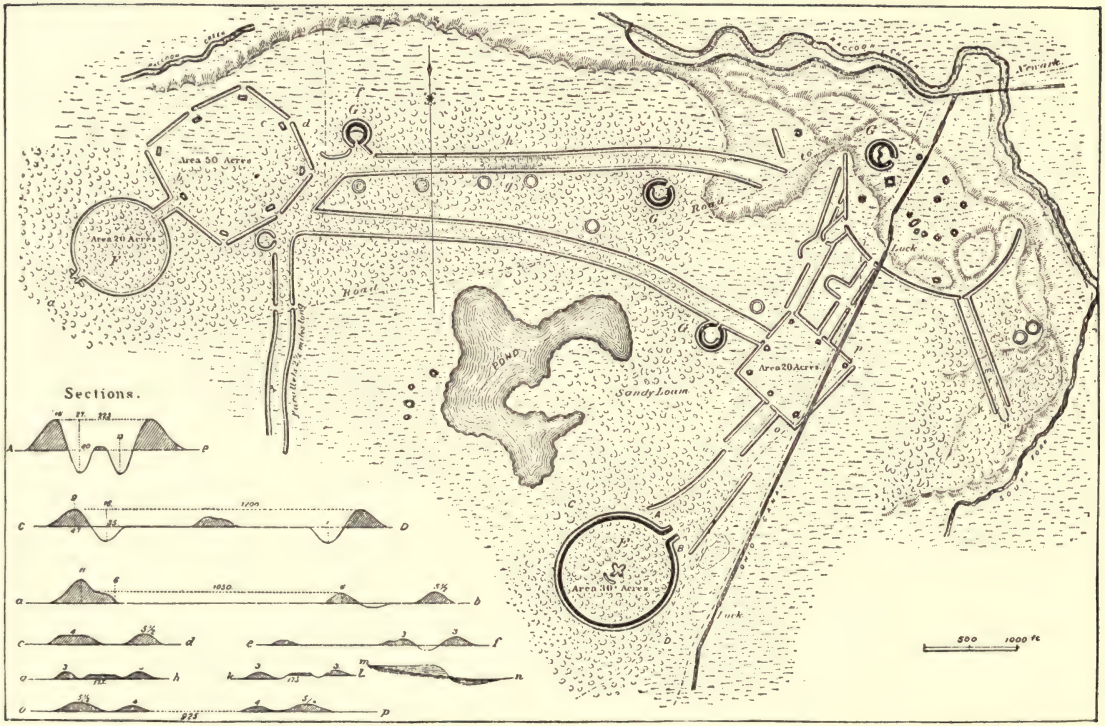
1. The top layer of accumulated surface soil, over one foot thick.
2. A thin layer of burnt yellow clay, three or four inches.
3. Dark sandy soil, somewhat over two feet.
4. A second layer of burnt clay, three inches.
5. A layer of dark sandy soil, nearly two feet.
6. A third layer of burnt clay, three inches.
7. A layer of dark mucky soil, five feet thick, resting on the original surface of the ground, in which layer were all the burials.

Among the articles accompanying the burials in this mound were several pottery vessels, including a double pot and a moccasin-shaped vase. Other articles were shell pins, possibly ear ornaments; engraved shells, showing a coiled rattlesnake; steatite pipes; flint arrow and spear heads; polished celts; discoidal stones; bone implements; and one iron chisel, which lay by the side of one of the skeletons; several shell ornaments; and three copper ornaments. In this instance there were, as stated above, three burnt clay layers, with intervening strata of sandy soil. How is this condition to be explained? Was the first or lower layer of dark soil, some five feet thick, allowed to remain as a mound without further covering until it was thought a sufficient number of burials in it had been made, and then the additional layers spread over it; or were the burials

those of skeletons taken from other receptacles, and all interred here at one time? That no burials were made after the lower burnt clay layer had been placed seems clear, as no breaks in it were observed. Why the two upper burnt clay layers were added, unless accompanying some ceremonies in memory of the dead, is not easily explained.

Another type of burial mounds includes those in which there is a vault or some kind of enclosure other than the stone cist (which will be noticed a little further on) in which the body or bodies are placed. These have been found chiefly in the northern districts, seldom occurring in the Southern States. They are of various forms, some being constructed of timber or bark and others of stone. The simplest form of the wooden vault is merely a pen built up of round poles or logs, found occasionally in the northwest and in Ohio. One found in a mound in Hocking County in the latter State may be cited as an example. The mound in this case was oval in form, one hundred and fifteen feet long, ninety-six feet wide, and twenty-three feet high. It was peculiar in being surrounded by a somewhat rectangular embankment and an included ditch. In the centre of the mound, going down a foot below the original surface of the ground, were the remains of a wooden vault, about ten feet square. This was literally a pen built up of round logs, most of which were a foot thick. They had evidently extended a short distance beyond the corners, where they overlapped, at each of which a strong stake had been driven perpendicularly into the soil to hold the timbers to their place. Whether the logs had been notched where they crossed in order to lessen the opening was not ascertained. However, driving the stakes in the outer corners to keep the logs in place would indicate care in other respects. The bottom appears also to have been covered with poles before burial. The vault contained a single skeleton extended along the centre with the head toward the south, with a sufficient number of shell beads about the neck and chest to have made a strand nine yards in length. An

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Plan and sections of earthworks at Newark, Licking County, Ohio; from Whittlesey's survey.

excavation of portions of the surrounding wall, which was some two to three feet in height, revealed the remains of posts, indicating that the mound had been surrounded by a fence of upright posts.

More care than usual appears to have been taken in this instance, though one or two wooden vaults of similar construction have been observed. In other cases, the vault seems to have been merely a covering of poles placed over the grave after it had been filled up. As the poles in such cases were fastened down in some way, the covering was evidently intended to protect the body from wild beasts. In all such cases the body was buried in the flesh.

Colonel Norris, while exploring in the interest of the Bureau of American Ethnology, discovered in some of the mounds in West Virginia remains of wooden vaults which appear to have been formed by first digging a square pit in which wooden posts were placed close together around the sides, and after the bodies were buried, a kind of flat roof-shaped covering of poles was placed over it. One case of this kind was very interesting as it formed what we may, without exaggeration, call the record of an incident in the history of some prehistoric tribe.

It seems from the evidence that the tribe had, on some occasion and for some reason, built a mound of considerable size, somewhat over one hundred and fifty feet in diameter and twenty feet high. This appears to have stood undisturbed for an indefinite length of time; it may have been but a single season, or it may have been a number of years. Be this as it may, a time came when an important personage in the tribe, who must have been comparatively a giant in size and of great physical strength, died. To do honor to his memory, a pit some twelve or thirteen feet square was dug in the top of the mound to the depth of five feet, which was walled around in the manner stated above; and after this person, with four others, all wrapped in bark, were placed in it, a covering of poles was raised over it, and an addition of fifteen feet in height built on the original mound.

That the principal person buried here was one of importance in the tribe is inferred not only from the fact that he occupied the central position in the vault, and from the heaping of a mound over it, but from the further fact that around each wrist were six heavy copper bracelets and on his breast was a copper gorget. By each hand were three unused black flint lance heads; near the right hand were a small hematite celt and part of an ax of the same material. Around the head, neck and hips were about a hundred small perforated shells and thirty-two shell beads. Upon the left shoulder, one upon another, were three sheets of mica, about six by ten inches in size. This skeleton was found by actual measurement, before removal, to be a little over seven feet long. These facts, if imagination and our knowledge of native character be allowed to play a part in the effort, throw some light on an important episode in the history of some ancient tribe, possibly the Cherokees, who occupied this section of West Virginia—Kanawha valley—for a time. The explorer, for some reason not given, was inclined to consider the upper section of this mound as contemporaneous with the building of the celebrated Grave Creek mound.

Double vaults, or vaults standing one above another, are uncommon, yet two at least of this character have been observed. A very interesting example of this type was found in one of the noted Paint Creek groups, known locally and also in descriptive accounts as the Baum works, Ross County, Ohio. This mound is mentioned in the celebrated work of Squier and Davis, who describe it as pyramidal in form, one hundred and twenty-five feet across the base and fifteen feet high. In this were the remains of two circular wooden vaults, each twelve feet in diameter and five feet high, one exactly over the other. They were built of small upright posts, five or six inches in diameter, the upper one having two circles of these posts about eighteen inches apart, but the lower vault only one. The bottom of the lower vault was covered with a layer of poles radiating from the centre. Some seventeen skeletons were observed

lying at different depths in the two vaults, all stretched out at full length, except one, which lay partly on the side, with the knees drawn up. Over one were the remains of poles, indicating that the body had been covered with poles when it was buried, though all the skeletons were in the vaults, which would seem to have been sufficient covering.

Before describing other types of vaults, attention is called here to the statement by Squier and Davis in their *Ancient Monuments* (161) in regard to the burial mounds of Ohio:

> Mounds of this class are very numerous. They are generally of considerable size varying from six to eighty feet in height, but having an average altitude of from fifteen to twenty or twenty-five feet. They stand without the walls of inclosures at a distance more or less remote from them. . . . They are destitute of altars, nor do they possess the regularity which characterizes the "temple mounds." Their usual form is that of a simple cone; sometimes they are elliptical or pear-shaped. These mounds invariably cover a skeleton (in very rare instances more than one as in the case of the Grave creek mound), which at the time of interment was enveloped in bark or coarse matting, or inclosed in a rude sarcophagus of timber, the traces, and in some instances, the very casts of which remain. Occasionally the chamber of the dead is built of stone, rudely laid up without cement of any kind. Burial by fire seems to have been frequently practiced by the mound-builders. Urn burial also appears to have prevailed to a considerable extent in the Southern States.

Notwithstanding the high character of the authors of *Ancient Monuments*, these statements cannot all be accepted as correct, even when applied to the district to which they refer. Instead of the burial mounds having an average altitude of from fifteen to twenty-five feet, the average is less than ten feet; nor is the statement that they very rarely cover more than one skeleton to be taken as a general rule, but as applicable only to those examined by these authors.

Stone vaults, which are not uncommon in burial mounds, are of various forms, but, like the wooden vaults, are confined chiefly to the northern districts. One type is built up of unhewn stone, circular in form, rounded up until

closed at the top somewhat in the form of a beehive. One of this form opened by Thomas in northwestern Pennsylvania revealed some rather puzzling items. The mound in this case was only fifty-two feet in diameter, though much worn by the plow, and was three and one-half feet high above the original surface of the ground; but it covered a pit about forty feet in diameter, which extended down in the original soil to the depth of two and one-half feet. The top portion of the stone vault which was built up in the middle of the pit had fallen in, but enough remained in place to show the plan and size. It was apparent from the too great width in proportion to the height that the builders had miscalculated the proportions necessary to stability, as the outside diameter was fifteen feet, while the height could not have exceeded seven feet. The walls, however, were very thick at the base, fully four feet. The bottom of the vault was formed of two layers of flat stones, separated by an intermediate layer of sand, charcoal, and remains, five inches thick at the time it was excavated. It was apparent that these layers had not been disturbed since they were placed there, save by the pressure of the superincumbent mass which had fallen upon them. In the thin intermediate layer, made so by the weight pressing on it, were the teeth, decaying jaws, a single femur, and a few badly decayed fragments of other bones of a human skeleton, and with them the joint of a large reed or cane, wrapped in thin, evenly hammered silver foil. The last had been wrapped in soft, spongy bark of some kind, and this coated over with a thick layer of mud or soft clay. The weight of the stones was so great that the femur was pressed into a flat strip, and the reed, which was more than an inch in diameter, was split. The metal, which was submitted to analysis, was found to be comparatively pure native silver, containing no alloy. The foil, before being wound about the reed, had been cut into ornamental forms. A small stone gorget was obtained from the same layer. Our description will be complete by adding that this was the site of a former Seneca village; however,

the people of this village buried, so far as could be ascertained, in graves in a cemetery they had set apart, and not originally in either of the three mounds at this point.

The presence of the large reed indicates intercourse with people as far south as the lower Ohio, or excursions to that region. The thin, even silver foil seems to denote intercourse with the whites, though we learn from the correspondence of General William Irvine with General Washington that silver ore in small quantities had been found in western Pennsylvania by the Indians. If the explanation given be that the silver foil was the work of the whites, we have positive evidence that Indians, possibly Senecas, were building mounds not only in post-Columbian times but after English and French settlements had been made on the eastern coast and on St. Lawrence River.

Some very singular vaults were discovered in western North Carolina and eastern Tennessee during the explorations carried on in that region by the agents of the Bureau of American Ethnology. These are individual vaults; that is, each individual buried in the mound (except a few that received no covering) had his individual beehive-shaped vault built up of cobble stones. A few hardened clay vaults of similar form over individual burials have been found in West Virginia in mounds. Burials in these individual vaults, at least in those mentioned, may be ascribed with considerable assurance of being correct to the Cherokees.

As the chief object in view in studying the antiquities of any given section is to learn therefrom the characteristics, arts, customs, etc., of the people who left these remains, those monuments which throw most light on these points are the most interesting to the antiquary. This being the standard, the stone graves, or rather the box-shaped stone graves, are among the most interesting monuments of the mound area. Not only because we learn much from them in regard to the people who buried in them, but also because there are strong reasons for believing that the chief tribe which made use of them can be identified.

There are several forms or varieties of stone graves, or cists, found in the mound area, some being of cobble stones, others of slabs, some round, others polygonal, some roof-shaped, others square, and others box-shaped or parallelograms. The reference at present is only to the last mentioned—the box-shaped type, made of stone slabs. These graves, which are generally in groups forming cemeteries, or in mounds, are usually constructed as follows: First, a pit is dug some two or three feet deep, in the form and the size of the ordinary grave pit of the present day. A number of flat undressed stones are placed to form the floor; next, similar pieces are set on edge around the sides and ends. The body having been placed therein, other slabs are laid flat across the top, forming the covering. Whether it was usual to throw dirt over the body before covering is not positively known, for the reason that rains soon carried down dirt and filled the grave, though none had been cast over the body at the time of burial. However, one or two have been found so well covered as to prevent silting, in which cases the body was not covered with dirt; one instance of this kind was observed by the agents of the Bureau of Ethnology in southern Illinois. Sometimes the floor was omitted. Although these box-shaped sepulchres were usually of sufficient length and width to permit the body of an adult to be stretched out at full length on the back, others were so small that a cemetery of this kind in Tennessee was for a long time supposed to be the burial place of a race of pigmies. It was discovered however that small cists of this type contained in most cases the bones of adults, which had been disarticulated before burial. Cases of this kind have been observed in which the bones of an adult were contained in a cist but two feet long and nine inches wide, inside measurement. On the other hand, graves of this kind were sometimes made of sufficient size to contain the bodies of two adults stretched at full length, and apparently buried in the flesh.

Graves of this type occur chiefly along an irregular belt stretching from southern Illinois to northeastern Georgia. They are found in considerable numbers in southern Illinois, Kentucky, middle and east Tennessee, northeastern Georgia, also at certain points in Ohio and in the valley of Delaware River, though the sections of greatest abundance are southern Illinois and middle Tennessee. They are found in mounds in both these sections, but more abundantly in the latter than in the former.

A number of cemeteries, composed entirely of graves of this type, have been discovered in southern Illinois, chiefly in Monroe, Randolph, and Union Counties. These are generally on somewhat elevated positions, as a terrace or level space on the side of a hill. In one or two of these cemeteries most of the graves point east and west, though the heads appear to have been placed as often toward the east as toward the west. The graves, however, were, in part at least, comparatively recent; in fact, it was generally understood by the old settlers of this locality that these were graves of the Kaskaskia and other Indians who resided here when this part of Illinois began to be settled by the whites. A person who had seen a Kaskaskia buried in a box-shaped stone grave in Jackson County, Illinois, was still living when the agent of the Bureau of Ethnology was exploring in that county.

A mound in Alexander County, Illinois, was found to be literally crowded with stone graves; although but about one hundred feet in length, forty in width, and four feet high above the natural surface of the soil, it was found to contain some thirty-five or forty stone graves in three tiers in some parts of the mound. The mound, it seems, was built over a pit some four or five feet deep, and the adding of stone cists appears to have gone on until the pile had risen some four feet above the original surface of the ground, and then it was covered with dirt, or rather the covering went on as the pile rose. The graves in this mound appear to have been of all sizes, from two feet in

length and nine inches in width, containing the remains of an infant, to those seven feet long and in some instances wide enough to contain the remains of three adults. Some of the burials, as that containing the remains of three persons, were made after the flesh had been removed.

There was taken from one of the graves of this mound a Catholic medal of copper, bearing on one side, a human figure holding an infant, and the name Stanislas Kostka, and on the other side, a human figure and the name St. Louis de Gonzaga. It is probable that this was given to some Indian by Fr. Gravier, who went down the Mississippi in 1700, and stopped for a time in the locality where Kaskaskia was located. It was, in fact, through his efforts that the Indian town of Kaskaskia was established. The Kaskaskia Indians had separated from their kindred, the Peorias, in northern Illinois, and were making their way to Louisiana when Gravier succeeded in halting them in southern Illinois and founding the village of Kaskaskia.

Graves of this type are most abundant in middle Tennessee, especially in the Cumberland valley and the section in which Nashville is located. These have been carefully investigated by Dr. Joseph Jones and described in one of the Smithsonian contributions. Although Dr. Jones attributed them to an "ancient race," he was forcibly reminded, as he studied them, of their resemblance to the graves of Europeans, as he remarks: "In looking at the rude stone coffins of Tennessee, I have again and again been impressed with the idea that in some former age this ancient race must have come in contact with Europeans and derived the mode of burial from them. . . . The ancient inhabitants of Tennessee and Kentucky buried most commonly in long stone graves, with the body resting at length, as among civilized nations of the present day in Europe and America."

Dr. Jones during his explorations of the stone graves of middle Tennessee found a number of mounds filled to a greater or less extent with these stone cists. In some

instances the mound was so crowded with them that they were piled one upon another three tiers high. He found one or two mounds in which they were arranged like the spokes of a wheel, the heads toward the centre. In the centre of the mound, the point from which the sarcophagi radiated, was a large basin-shaped clay vessel. There were two rows of cists in this mound, one outside of the other.

Thomas has proved pretty clearly that the Shawnees and to some extent the Delawares and southern Illinois Indians (chiefly Kaskaskias) were accustomed to bury their dead in stone graves of this type.

It has been shown in *The Indians of North America in Historic Times*, that the Shawnees lived in the Cumberland valley, and in the precise section where these stone graves occur, from some unknown period in the past, some period antedating to an unknown extent the middle of the seventeenth century, until 1740. There does not appear to be any evidence, traditional or otherwise that this section was occupied by any other tribe until the Shawnees were driven thence by the Chickasaws and Cherokees about 1740. After that the Cherokees set up a claim to all that part of Tennessee and adjoining portions of Kentucky, and ceded them to the United States. The fair inference, therefore, until some reason to the contrary is shown, is, that the Shawnees were the authors of both the graves and mounds of this district.

Stone graves have been discovered in northeastern Georgia on the headwaters of Savannah River; and in this same section formerly lived a colony of Shawnees. Similar graves have been observed in the valley of the Delaware, which are attributed to the Delaware Indians, though it is possible they were due in part to a colony of Shawnees who were living in the same section. Barber states that "several tribes were accustomed to incase their dead in stone boxes or tombs. Among these were the Lenni-Lenape or Delaware of Pennsylvania, although the graves already opened

show an antiquity of probably not more than one hundred and fifty or two hundred years [he was writing in 1877] because the native contents, consisting of fragments of rude pottery and ornaments, are associated usually with articles of European manufacture." However, Loskiel who wrote a century earlier states positively that the Delawares buried in stone graves. "They buried their dead," he remarks, "by digging a grave of the required size and about one or two feet deep; they put stones at the bottom and set others at each end and each side on the edge; then laid the body in, generally on the back at full length, covered the grave with the same kind of stone laid as closely together as practicable without cement, sometimes laying smaller stones over the joints or cracks to keep the earth from falling into the grave. Then they covered the grave with earth, not generally more than two or three feet high."

The evidence is therefore conclusive that the Delawares, and by inference the Shawnees, did bury their dead, in part at least, in box-shaped stone graves. Stone graves of the same type occur in Ashland County, Ohio, where the old Delaware villages were located. However, the graves found south of the Ohio cannot be attributed to the Delawares, but were no doubt burying places of the Shawnees, as people of this tribe are known to have resided for a time at almost every point where they occur, as at a point in east Tennessee, in the vicinity of Winchester, West Virginia, and elsewhere. To the same people must be attributed the stone graves in Gallatin County, Illinois, in the vicinity of the old "Shawneetown" village where a considerable body of the tribe dwelt for many years. It is probable that the numerous graves of the same kind in Union and Alexander counties of the same State mark prehistoric habitats of the same tribe.

Burial in ossuaries or "bone-pits" was common in some parts of Canada and not unknown south of the lakes. It is supposed and, in fact, is quite certain that some of these are the places of communal burial made at the "Great

Feast of the Dead" so vividly described by Jean de Brebeuf in the *Relations des Jésuites* of 1636, who was at that time among the Hurons at the village of Ihonatiria. It was the custom at this feast to collect the bones of those persons of the tribe, village, or band who had died during the previous twelve years, from the scaffolds and other burial places, and deposit them all in a single pit dug for this purpose. Some of these pits contain as many as a thousand skeletons. From the statement by Brebeuf and the *Report of the Canadian Institute*, a number of these communal burials are known to be of post-European date, copper and brass kettles having been found in them.

Burial in ossuaries, though probably not all tribal or village communal burials, was somewhat common about Lake Simcoe and a part of Georgian Bay, and near the west end of Lake Ontario, Canada. In a few instances, supposed ossuaries are merely hasty and confused burials in pits when for some reason there was not time for deliberate burial. A modern instance of this kind is recorded in the second Esopus war of 1663. The Dutch "came to the fort of the Esopus Indians . . . and there found five large pits into which they had cast their dead. The wolves had rooted up and devoured some of them. Lower down on the hill were four other pits full of dead Indians." This may possibly furnish an explanation of other confused burials of prehistoric times.

## CHAPTER XVII

### *POTTERY AND PIPES*

BEFORE offering any comments on the facts presented in the preceding chapter in reference to burial mounds and the different modes of burial by the people who inhabited the Atlantic section in prehistoric times, it is proper that we should examine somewhat carefully the various relics which have been obtained from these mounds and ancient graves. From the local monuments, some of which, as the enclosures and other mural works, are yet to be described, we learn much in regard to the people by whom they were built. The builders of the Cahokia group, which includes the giant mound of its type, also of the Etowah group in northeastern Georgia, and the Rich Woods cluster of southeast Missouri, must have been sedentary or at least substantially so, depending to a large extent upon the cultivation of the soil for subsistence. Nomadic tribes and those relying wholly upon the chase and native growths for their food supply never erect permanent works of this kind, and agriculture north of the West Indies we know meant the cultivation of maize as the chief item. We may infer, therefore, with positive assurance of being correct, that the people who built the three important groups mentioned were cultivators of the soil and that maize was the chief item of this cultivation. It follows, therefore, as a necessary inference, that these groups were not constructed until the cultivation of maize had travelled from its native home in Mexico or Central America to the regions in which they are located.

We are also justified in inferring, from the size of the mounds and the extent of the three groups, that the tribes by whom they were built were strong, at least in population, and that they had inhabited their respective localities for a long time before they were abandoned. Applying the same method of reasoning to all the local works, we learn not only the facts mentioned, but other items in reference to the people. But to obtain some idea in regard to their domestic life and home customs, we must study the minor products of art which are gathered from the mounds and graves: their vessels, implements, armaments, toys, articles made for and used by them in their amusements; and other relics.

Thomas has warned us that the first step in this study is the knowledge that what we take up for this purpose are genuine relics. In these days, when "ancient coins" are prepared in quantities for sale to the unwary, and even mummies are manufactured, this caution should not go unheeded.

Of all the relics of antiquity, pottery is perhaps the most useful in judging of the art and domestic life of ancient people and in defining their geographic limitations. Being practically imperishable, there is no time limit to its duration in the span of human existence; and as the need of vessels is common to all races and classes, the use of clay in pottery making is almost universal among peoples sufficiently advanced to manufacture it. It is also claimed by some authors who have devoted attention to ceramics, that, as clay in the process of manufacture readily receives the impress of individual thought, and through this of national thought, the stamp of each people is distinctly impressed upon pottery articles. However, it must be remembered that art lines are not always identical with ethnic lines. This is shown by Professor Holmes's map of pottery districts or groups in the *Twentieth Annual Report of the Bureau of American Ethnology*, as more than one of these groups, for example, that designated the Middle Mississippi Valley Group, includes the habitats of tribes belonging to

different stocks. The boundary of this group, as given in the map, includes the areas of tribes belonging to the Algonquian, Siouan, Muskhogean, Caddoan, and Natchesan stocks. Holmes also alludes to this variation between art and ethnic lines in his paper (21 and 28).

As this author is the recognized authority on the ancient and aboriginal pottery of the Atlantic section, we shall freely use his paper referred to, though we may not accept all his deductions and conclusions. Attention is called first to his "pottery groups" or districts. The arrangement in his map is somewhat different from that in the text. In the former there are the Middle Mississippi Valley Group, including southern Illinois, southern Indiana, and southern Missouri, and thence south on both sides of the Mississippi to Louisiana; the South Appalachian Group, covering Georgia and South Carolina and the adjoining portions of Alabama and North Carolina; the Middle and Northern Atlantic Slope Group, extending along the coast from North Carolina to Maine; the Iroquoian Group, embracing New York, parts of Pennsylvania, Canada, and Iowa. In the text, the division is into the following provinces: Middle Mississippi Valley, Lower Mississippi Valley, Gulf Coast, Florida Peninsula, South Appalachian, Middle Atlantic, Iroquoian, New Jersey and New England, Appalachee-Ohio, Ohio Valley, and the Northwestern.

Of these the so-called Middle Mississippi Valley province is preëminently the pottery region of the Atlantic section, and of the mound area. It includes the area immediately west of the Mississippi, from Missouri River south to and a short distance below Arkansas River; southern Illinois, most of Kentucky, and west and middle Tennessee. The ware of this province exhibits a greater variety of forms than that of any other district of the Atlantic section. The general forms of cups, bowls, platters, pots, bottles, pipes, etc., are so diversified by varieties, eccentricities, and ornamentation as to produce an infinity of forms and well-nigh defy classification.

Holmes remarks that if asked to point out the one feature of the ware of this district by which it could be most readily distinguished from that of the other provinces, he would select the bottle shape as the most satisfactory. While it is true that the bottle shape is found here in almost endless variations from the globular olla with short neck and many eccentric forms to the ordinary water-bottle form, it is also true that the repeated introduction of animal forms and the human figure in the ornamentation of the rim, as well as in the form of the vessels themselves, is also a distinguishing feature. Similar forms are found in other districts but nowhere in so large a proportion as here. Bowls occur in the collections from this district which have been fashioned into the shape of birds, fishes, reptiles, and shells, and bottles and vases in both animal and vegetable forms as well as in the human shape.

One of the most interesting types of pottery vessels found in the entire section is a series of vases made to resemble the human head, one side showing the entire face. Some of these vessels, which have so far been discovered almost exclusively in eastern Arkansas, are so well formed as to lead to the impression that they are attempts to copy the features of particular individuals. The marks on the face are probably intended to represent tattooing or painted designs. Be this supposition correct or not, it seems evident that the features shown in some two or three of these vases are something more than the conventionalized designs seen in numerous examples. Although it is assumed that these typical forms are intended to represent the face of the dead, or, in other words, are death's-head vases, because the eyes are closed, giving a deathlike expression to the features, yet this is very doubtful, in fact, improbable. These vessels are doubtless the work of Indians and of Indian women, who would most certainly have been prevented by their superstitious notions regarding the dead from any attempt to represent, even in the remotest degree, the features of the dead. Moreover, the closed eye was usual in face-form



Type of tipi as used by the Wyoming Shoshoni. *From a photograph supplied by Professor W. J. McGee.*


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vessels. However, we see in these vessels evidence of considerable artistic skill on the part of the native potters, especially if we take into consideration the fact that the potter's wheel was unknown to them. That they could imitate with considerable accuracy is shown in their vessels representing gourds, shells, fish, and, among their bottles, a few undoubted imitations of the European glass decanter. Some of their pots appear also to be imitations of the introduced European iron pot.

The clay pipes of this province are of the crude form with the projecting stem hole almost or quite as large as the bowl. But this province was not noted for its pipes, there being few in comparison with the number found in other districts. There are some figures whose forms and ornamentation deserve notice. One of these is an owl-shaped vase from Tennessee, the only one, we believe, of the particular type here referred to found in the mound area. The point of interest in reference to it is that it is a precise copy in every detail of owl-shaped vases obtained from the Pueblo section. On one of the wide-necked bottles from Arkansas have been formed by incised lines two well-shaped, winged and crested serpents. The rattles to the tail show that they are intended to represent the rattlesnake. The heads, however, are a little too much inclined to the bird form to be true to nature. Is this design wholly the creation of a native Arkansas potter? And if so was it a woman or a man? There are other designs, as scrolls, interlacing, etc., especially on the bottles of the lower Mississippi region, which are really graceful and pleasing. As the potters among the Indians were generally females, the question arises, are we to attribute these designs to females? Du Pratz, writing of this immediate section in 1758, says: "The women"—alluding to Indian women, especially the Natchez women—"make pots of an extraordinary size, cruses with a medium-sized opening, jars, bottles with long necks holding two pints, and pots or cruses for holding bear's oil." Dumont writing of the same section about the

same time, describes, with great particularity, the process of making coil pottery by the Indian women.

Accepting these statements as reliable, and by eyewitnesses of what they describe, the necessary inference is that the various pottery forms and the ornamentation and designs found on the vessels are all due to the female potters. Most of the mound pottery is made of clay mixed with pulverized shells or with pulverized crystalline rock. It is worthy of notice in this connection, as there may be occasion to refer to it again, that we have in the facts stated above, a direct connection between the historic Indians and the mound builders, at least of Arkansas and western Mississippi. The Indian women of these sections were found by Du Pratz and Dumont making precisely the same kind of vessels as those found in the mounds of the same sections. There are good reasons for believing that the authors of the mounds and pottery of eastern Arkansas were Quapaw Indians, a Siouan tribe which occupied that region at the time of De Soto's visit (1541–1542), and for an unknown period anterior thereto.

The pottery from the Gulf coast, which region is considered another province, is quite distinct when taken as a whole from the middle and southern Mississippi valley pottery. The largely prevailing type here is the broad, rather flattish, bowl, varied by increasing its height until the globular form or olla shape is reached. The markings are chiefly series of impressed lines in curves and loops and similar designs. Mortuary vessels are found in this province in limited numbers. There are a few eccentric forms among the collections from this region, though none of special interest, and pipes of clay are rare. The pottery may be attributed, without much doubt, to the tribes of the Muskhogean stock. There are reasons for believing that some of the finest specimens, especially from southwestern Georgia, were made by the Uchee Indians, who, Hawkins tells us, were "more civil, orderly, and industrious than their neighbors, the Lower Creeks," and were the people over

whom the noted Cacica, visited by De Soto, ruled; whose territory at that time lay along Savannah River, though they subsequently removed to southwestern Georgia. A mound in Richmond County, Georgia, near the locality of the Cacica's village, excavated by Mr. Reynolds of the Bureau of Ethnology, yielded a vase encircled by incised figures of horned rattlesnakes, some triune vessels, a beautifully ornamented bottle, and evidences of contact with Europeans. The mound was probably built by the Uchees after De Soto's visit.

The pottery of the Florida peninsula may justly be described as peculiar, and of such varied forms as to render it difficult to describe it in general terms. Cups and bowls, the latter often of large size, are quite common, "a subglobular form with constricted lip being typically Floridian." Eccentric and compound forms occur throughout the section. Among the former is a vessel in the form of the ordinary straight-crowned silk hat, with the brim a little broader than usual; another, in the form of and seemingly intended for a funnel; and others, which can only be classed as nondescripts. It is noticeable that a number of the pots and vases have the bottom rather more conical than is usual in most of the other districts. The ornamentation of the better specimens is somewhat similar to that of the Georgia pottery. There are few, if any, indications of West Indian influence in the pottery or in any other antiquities of the peninsula.

The Appalachian province, as defined by Professor Holmes, appears to be based on a comparatively few vessels, and does not correspond with the distribution of other classes of artefacts or types of local antiquities; in other words, it embraces geographically the meeting point of provinces based on other classes of antiquities, a fact referred to by this author. The distinguishing type is the so-called "stamped" ware, consisting chiefly of large vases or pots, some of which have a somewhat conical base. It also includes a few mortuary urns with covers. The

decoration consists in great part of stamped figures. It is very likely that this ware is attributable to the Catawba Indians, who have resided, since they first became known to the whites, in western South Carolina.

The few vessels assigned by Professor Holmes to his Appalachee-Ohio province are beyond any reasonable doubt due to the Overhill Cherokees, who formerly lived in east Tennessee, their chief villages being along and in the vicinity of Little Tennessee River. Possibly the pottery manufactured by the division of the tribe living west of the range differed in types from that of the division living east of the range. This would be interesting if true. The two or three interesting specimens from the east Tennessee section are the moccasin-shaped vessels, a two-handled cup with rows of nodes encircling the middle portion, and an owl-shaped water bottle. The latter is the vessel alluded to under the Middle Mississippi province.

As little pottery, save in fragments, has been found along the Atlantic coast, attention is directed to the types found in the Huron-Iroquois district, embracing New York, northern Pennsylvania, and the adjoining portions of Canada; in general, the country around Lakes Ontario and Erie. The distinguishing type is the pot or vase, with the square, projecting upright collar or rim. This sometimes assumes the form of a squarish mouth or rim, with elevated corners and sagging margins between. Cushing suggested that these features owe their origin to the bark vessels of the same region, which is probably the true explanation, and furnishes another example of the influence of environment. The manufacture of earthenware pipes, which will be noticed on a future page, was carried on here to a greater extent than in any other province.

The pottery described under the heading "Ohio Valley Pottery," consisting chiefly of cooking pots, resembles so closely some of the types of the Middle Mississippi Valley province that it might have been included in that group. We pass therefore to the "Pottery of the Northwest."

This province includes Wisconsin as its central or chief area and parts of Iowa, Illinois, Indiana, and Michigan. One important feature of the pottery of this section is found in the decoration, in the formation of which it is supposed the roulette and patterned punch stamp were used. However, the most interesting fact in regard to this pottery is the very strong resemblance in the form and ornamentation of the vases to those of Georgia and the southern Appalachian district. This striking resemblance can only be understood by a comparison of the figures or of the vessels. How this similarity, which goes too far into details to be considered accidental, is to be accounted for is difficult to understand. This is noticed by Professor Holmes, who remarks that: "Although the stamps were not quite the same as those used in the South Appalachian region, and were applied in a different way, taking the form of punches rather than of paddles, their use suggests a relationship between the art of the two sections, and this is enforced by the facts that features of ornamentation, shape and material show unusually close analogies." The single clue we have to the mystery is the fact that people of the Siouan family dwelt in both sections. Whether this affords a satisfactory explanation may be doubted, yet if it is rejected the mystery remains unsolved. If it be accepted the question arises: In which direction did these art types travel? a question which we leave each reader to solve to his own satisfaction.

Vessels have been found at various points in the Middle Mississippi Valley, as southern Illinois, southeastern Missouri, Arkansas, and Tennessee, which it is believed were used by the natives of these sections in making salt. The distinguishing characteristics of the vessels, so far as determined by the fragments, are their large size, their vatlike shape, the great thickness of the walls, and their peculiar finish, which consists of the impressions of coarse textile fabrics. These sherds are found in most cases in the vicinity of saline springs. While the army of De Soto was in Arkansas, they observed the natives making salt. The

Gentleman of Elvas describes the process, in which it appears the water, in order to free it from sand, was first strained through baskets into vessels, in which it was then boiled and evaporated, leaving the salt.

It is very probable that the pottery of this class found in southern Illinois, near Shawneetown, was used by the Shawnees in making salt. This appears to be clearly established by the evidence presented by Thomas in the *Twelfth Annual Report of the Bureau of American Ethnology*.

A few important deductions may be made from a study of the pottery of the Eastern United States. It forms another item in determining the culture status of the people who occupied the region in prehistoric times. It serves as a connecting link between the prehistoric and historic eras of this section, furnishes evidence that the mound builders were Indians, and indicates in some instances the stock to which the authors of works in a given section belonged. It is also apparent from the relation of pottery to the mounds, that the manufacture of the former dates back to the commencement of mound building. There is nothing, however, in the ceramics of this section to assist us in determining the age of the mounds,—save the occasional indications of contact with Europeans,—or to judge of the period of occupancy. One exception to this rule is that in the Iroquois district and northeastern sections the indications are that the art was introduced more recently than in the southern and western provinces. Are we to infer from this that these northeastern regions were occupied subsequent to those of the south and west? Before attempting to answer this inquiry we will wait until we have noticed another class of relics.

First, in our consideration of the pipes of ancient art we shall refer to those of stone and other materials as well as those of clay, the form being of more importance in a brief comprehensive notice of the types than the material of which they are made. If we are allowed to judge by the number of pipes found in mounds and ancient graves, the prehistoric

occupants of this section were fond of smoking; yet one of the most recent authorities on this subject, who has made a careful study of the aboriginal pipes of the United States, seems inclined to the opinion that previous to the advent of the whites smoking among the natives was limited to medicinal and ceremonial purposes, and not indulged in as a pastime. He says: "To the whites, who for a century or more used tobacco as a panacea for every ailment of the body, must be given the credit, if it be a credit, which many will doubt, of adopting the habit of smoking as a pastime."—(J. D. McGuire, in *Pipes and Smoking Customs of the American Aborigines.*)

This author, for the purpose of his work, especially with a view of indicating the localities of his maps, arranges the pipes in fifteen classes or types:

1. Curved-base mound pipes.
2. Heavy bird or animal pipes.
3. Tubular pipes.
4. Iroquoian clay pipes.
5. Iroquoian grotesque bird pipes.
6. Iroquoian rectangular pipes.
7. Disk or Jew's-harp pipes.
8. Biconical pipes.
9. Micmac pipes.
10. Siouan and Catlinite type.
11. Southern mound type.
12. Pueblo pipes.
13. Rectangular pipes, birds and animals on the bowls.
14. Monitor pipes.
15. Bowl and vase shaped pipes.

However, as most of the titles given these types fail to note any characteristic of the pipes included, and as a briefer and more general classification is better adapted to our purposes, we will consider them under the following types, which can be readily understood.

The simplest form, if we omit the tubular pipe, is the stemless pipe, consisting simply of a bowl with an opening

for the stem. McGuire gives these in part, under the title Pipe Bowls without Stems, in his text, but has no mark for them on his maps. Moreover, he includes some of the class under Micmac Pipes, Bird Pipes, Double Conoidal Pipes, and Idol Pipes, classifying by details rather than by the general forms, as this method was best adapted to the plan of his work, which, notwithstanding some positions with which we shall find it necessary to differ, is one of the most valuable recent contributions to the subject of which it treats.

Although the pipes of this class are usually simple bowls, mostly cylindrical, yet, by varying the proportions and introducing human and animal figures, the native artists have managed to produce quite a variety of forms. Among these are the plain, unornamented, urn-shaped bowl, from which they are varied to the barrel shape, vase form, and cylindrical. The Micmac Pipe of McGuire's classification, though found over a considerable extent of country both south and north of the lakes, is rather small in size, having an oval or cylindrical bowl standing on a kind of round or square pedestal, with a short circular constriction between the two, the stem hole being in the pedestal. Other forms are representations of the heads of animals, especially birds, and sometimes of the entire bird. Some found in Georgia, in the mound in the Uchee country, are tolerably fair representations of a man holding a vase in his lap.

Another variety of this class of pipes includes certain specimens which have so far been found only in Arkansas, Mississippi, and Alabama. They are of large size, varying from three to five inches in length and from two to four in height. They usually represent a crouching, panther-like animal, or a man in the same position or in a sitting posture. These were probably used for ceremonial or official purposes, or were possibly manufactured for show as curiosities.

The short-necked pipe may be taken as the type of a quite numerous class. They are scattered by McGuire under various headings, though the greater number that

he has figured are classed as Southern Mound Pipes. Of this general type, omitting from consideration the eccentric forms, there appear to have been three principal varieties: the upright round bowl, the upright square bowl, and the slanting bowl. The ornamentation is seldom elaborate and the eccentric forms are not numerous, consisting chiefly of the modification of the bowl to represent the human or animal head. They have been discovered in the greatest number in the Appalachian province, and are formed both of stone and clay, the latter being in a larger proportion than is usual in other types.

Another class, which includes the most important types of the entire series, is what has usually been designated the Monitor Pipe. However, as used here, the name includes those classed by McGuire as Monitor Pipes and Mound Pipes, as we prefer in this respect to follow what seems heretofore to have been the usual designation by most other students who have given attention to the subject.

As pipes of this form have hitherto been known as Monitor Pipes, there appears to be no good reason for the change by McGuire to Mound Pipes, which is as applicable to other types as to this; moreover, it is a term which is often used in a broader and more general sense. We shall therefore apply the term monitor to the type with the broad, flat, or curved base, extending out in both directions, that is as it has generally been applied. There is, however, one position taken by McGuire in regard to these pipes, which, notwithstanding the good work he has done, we cannot pass over without serious protest. It is that these pipes were made by Europeans or with European tools. As the question is an important one in the study of the archæology and history of the Ohio region a brief discussion of the data will not be a useless digression. As McGuire's position is stated somewhat indirectly it is necessary to refer to his language. He begins his description by referring to marks on specimens which he is satisfied could only be made by a file, and this is repeated in regard to other specimens. He speaks of holes

drilled, as he thinks, with a fine steel point, and of marks "difficult if not impossible to imitate without steel tools." He is also inclined to the opinion that the wings in the bird figures were formed with metal tools. Speaking generally he says: "The mound pipe is usually found associated with copper implements. The file marks observable so often upon those parts of the surface which are most difficult to polish indicate the use of steel implements, and the presence of silver makes one suspect the influence of the white man. Judge Henderson's perfectly round disk is one of the strongest arguments in favor of European manufacture, for perfectly round disks do not appear to belong to aboriginal art of the northern continent, and when the delicate finish and artistic merit of the mound pipe is considered there is left the conviction that the European is the author of the type." At another point he remarks as follows:

> The artistic ability to imitate in stone, animal form and action, is no more developed in pipes of the mound-builder type than it is in stone carvings made by Indians in contact with the white man of the present day, the latter producing work equal, if not superior, to any from the mounds. An argument in favor of the contemporaneity of these pipes with the whites is that were they of purely aboriginal origin we would find also numerous examples of their idols or fetishes, executed with similar artistic ability. If these objects were of local white origin, we may safely infer that while the whites would supply pipes in effigy of man or beast, the religious prejudices both of early French and English during the seventeenth century would have caused either to recoil with horror from any attempt to further idolatry or idolatrous worship for fear of their own future punishment did they do so.

And the author suggests Lake Michigan or Lake Erie as being the point of the origin of the type; from whence they were distributed by the French traders to the Indians. He also states that the places where they have been found are along the lines of early French travel. This is true as to the localities in Iowa and Illinois, but not as to the localities in Ohio; for Ohio River was not a line of travel for the whites until a comparatively late date, except from Lake Erie to the headwaters of the Allegheny and down that river to

its junction with the Ohio, but there is no evidence of early travel of white traders down the Ohio from this point. It was a line travelled by the Indians, but not by the whites, until some years after the route by the lakes and down the Mississippi had been traversed by the French.

His statement that "Though the very country where mounds are most abundant was the battleground of French, English and Indians for many decades in the struggles waged between the English and French for the possession of the Indian trade, some of these supposed aboriginal earthworks may well have been the fortified camps of one or other of the white invaders;" could scarcely have been made with any more serious thought than a mere tentative suggestion, which might possibly include some of the hill forts; for the author is too well acquainted with the work of Squier and Davis to believe that the enclosures and other works of the Scioto valley bear any indications whatever of French or English construction. However, there is an insuperable objection to this theory. The struggle between these two nations in the Ohio region, the possession of the fort where Pittsburg now stands being considered the chief point of vantage and control of the Ohio, did not begin in this region until the middle of the eighteenth century, whereas there is satisfactory evidence that the greater portion of these works were then in existence and covered with a forest growth, except at a few points where the Shawnees had cleared it away for the purpose of cultivation.

There is a serious objection to the entire theory so far as the pipes from the mounds of Ohio are concerned. As they were obtained from the mounds, and were certainly not deposited in connection with intrusive burials, they must have been received by the Indians before the mounds were built. As we have historical evidence that these mounds were in existence as early as 1760, and in addition thereto the undeniable evidence of greater antiquity by the forest growth upon them, it is certain that the more important works as those at Newark and in the Scioto valley

were built before the settlement of the Shawnees in the latter localities, after they were driven from their early home in the Cumberland valley, Tennessee; and before the contests between the French and English in the Ohio valley occurred. If they were in existence before the settlement of the Shawnees on the Scioto—about 1740 or 1750—it will be necessary to go back in time to a period long before any French *voyageur* or *coureur du bois* had passed westward beyond Lake Ontario to reach the date of their erection.

That some of these works were covered by a heavy forest growth at the time they were surveyed by Squier and Davis, is positively asserted by these authors; one of the trees being twenty-three feet in circumference and showing six hundred rings of growth—probably only three hundred, one being counted as two. Atwater, who made a careful examination of the Ohio works under consideration, in 1819, applies the term "centuries" in speaking of their age and justifies its use as follows: "We say centuries from the fact that trees were found growing on these ancient works, whose ages were ascertained to amount to between four and five hundred years each, by counting the concentrick circles in the stumps after the trees were cut down; and, on the ground beside them were other trees in a state of decay, that appeared to have fallen from old age." In another place he says: "Trees of the largest size whose concentrick annular rings have been counted have, in many instances, as many as four hundred, and they appear to be at least the third growth since the works were occupied." That the ancient enclosure at the mouth of the Scioto was already in existence when the French and English were fighting in the Ohio valley is certain, as the French, according to Atwater, cachéd in one of the walls a quantity of pickaxes, shovels, gun barrels, etc. The same author found the vegetable mould on some of these works ten inches in depth, another indication of age.

That there was here and there a mound built by the Shawnees after their arrival in the Scioto valley where these

works are located is probably and almost certainly true, and that they buried sometimes in the older works, as in the Circleville mound and one of the Marietta mounds, seems to be proved by the position of bodies.

It being clear that most of the mounds and ancient works of the Scioto valley, where many of the monitor pipes were found, were in existence when the Shawnees settled there, the theory advanced by McGuire meets with a serious obstacle in the fact that for more than a century previous thereto there was no Indian tribe inhabiting that part of Ohio, nor, in fact any part of the area embraced in the State, except, perhaps, a strip along the shore of Lake Erie, and a limited area on the Maumee. Col. M. F. Force in his *Early Notices of the Indians of Ohio*, says that: "In the latter half of the seventeenth century, after the destruction of the Eries by the Five Nations, in 1656, what is now the State of Ohio was uninhabited." Not only so, but there is no satisfactory evidence of any tribe having occupied the southern and central part of the State at any time during the seventeenth century.

Satisfactory reasons are given in *The Indians of North America in Historic Times* for believing that the Shawnees were, in 1672,—the date Parkman gives as the time when they were expelled from Ohio,—and had been for an unknown period previous thereto, residents of the Cumberland valley in Tennessee, and had not lived in Ohio previous to 1750. As most of the mounds of the Scioto valley were built before the Shawnees settled there and no other tribe had occupied the region for more than a century previous thereto, in fact, since the Cherokees dwelt in the upper Ohio region, the pipes in these mounds must have been there during that long period. This makes it impossible to attribute them to the whites or white influence, and overbalances tenfold the supposition of the white man's work because of scratches which have the appearance of being made by files. That the mounds and ancient works were built before 1750 is too well established to be doubted,

hence McGuire's theory in regard to the origin of the pipes found in them unquestionably falls to the ground.

Finally, we have the positive statement of Adair, who was among the southern Indians as early as 1740–1750, that the Cherokees made pipes of the monitor type precisely as we have used that term. His description is so exact that it cannot be mistaken, and can apply to no other type, though he knew nothing of pipes of the same form obtained from mounds which were in all probability built by the Cherokees when they dwelt in the Ohio valley. It is a little singular that Colonel C. C. Jones should, in his *Antiquities of the Southern Indians*, exactly reverse McGuire's theory, by averring that the Cherokees made pipes to sell to the English settlers.

Further argument is unnecessary, yet it may be added that it would be a very strange fact, indeed, for the whites to enter upon the manufacture of pipes of a type previously unknown to them and to the Indians to trade to the latter, especially when these were certainly far less convenient than other types and had to be made of stone. It is far from likely that the manufacture of such pipes would have been profitable.

Returning now from our digression, which was deemed necessary because of the importance of the subject, attention is called to another form of mound pipes, which we may designate the "long stem type." Pipes of this form which have a distinct stem, often comparatively long, have been very rarely found except in the northern and Appalachian districts; those, however, of the former section are quite distinct from those of the latter; those of the northern region are of clay, while those of the Appalachian district are always of stone. Boyle, who has given much attention to the study of Canadian antiquities, says the method of forming Canadian pipes of this class was to mould the clay round a flexible twig or thong, one end of which entered the base of the bowl, and which being allowed to remain there disappeared during the burning process.

Another class, designated by McGuire as Heavy Animal and Bird Pipes, includes the large pipes in the form of elongate animal figures, with the bowl on the back; the animal is sometimes a bird, sometimes a wolf or fox, with the legs drawn up to the sides of the body. They are all of stone and occur chiefly in Tennessee and the Gulf States. Some of the specimens of this type found in the museums are of doubtful authenticity.

Another class of pipes, which McGuire considers of much importance, are those of the cylindrical or tubular form. These, however, are confined chiefly to the Pacific slope from California southward, including the Pueblo region. Those of this class found east of the Rocky Mountains are probably intrusive; and a number of those so classed were probably never intended for or used as pipes.

## CHAPTER XVIII

### *ARTICLES OF SHELL AND COPPER—TEXTILE FABRICS*

THE number of articles in shell found in the mounds and ancient graves of the Atlantic section, indicate quite an extensive use by the former inhabitants of this section of articles of this class. They were used as vessels, implements, ornaments, as a medium of exchange and mnemonic symbols, besides, when ground up, as a means of tempering clay to be used in manufacturing pottery.

Although the natives of most sections manufactured cups and other drinking vessels out of various materials, the sea-shell appears to have been a favorite vessel for drinking purposes; it was with the Indian as the finer quality of dishes are to the good housewife among civilized people. The *Heliotis*, *Pecten*, and especially the *Busycon perversum*, in their natural form or properly shaped, were used as drinking vessels. Not only have these, especially the *Busycon*, been found in mounds, but there is evidence of their use formerly among the Indians for drinking vessels. They were used by the Florida Indians in their periodical feasts; and it is mentioned how at a certain time in one of their festivals two men came in, each bearing very large conch shells filled with a black drink. After considerable ceremony this drink was presented to the Indian chief, to the white men present, and then to the entire assembly. De Bry, in the plates of his *Brevis Narratio*, furnishes two instances, Plates 19 and 40, where shells are used as drinking cups.

In one, females are represented as placing shells containing food or drink on graves.

For the purpose of forming these shells into drinking vessels, the whorl—columella—and about one-half of the outer shell are removed. Specimens of the *Busycon perversum* thus prepared have been found from ten to twelve inches in length and from six to seven in width at the widest point, forming cups of considerable capacity. Specimens of the *Strombus*, *Cassis*, and *Fasciolaria* have also been found, showing that they were occasionally used for the same purpose. Specimens of the *Busycon* have been found in mounds as far north as the headwaters of the Mississippi; however, they are confined chiefly to the Southern States.

While the large univalves were made to do service as drinking vessels, they were used also, as will appear, for other purposes; the bivalves were also brought into use in several ways. They were made to answer for spoons, by carving out a kind of handle. This was done by cutting away portions of the anterior and basal margins of the shell and leaving the angle projecting, which was slightly ornamented by notching. Various species of *Unio*, as the *alatus*, *ovatus*, etc., were used for this purpose. Other and heavier species of *Unio* were used as scrapers, to scrape up earth in cultivating corn, as skin dressers, in scaling fish, and for other purposes. They were very often used without any preparation, but were more frequently fastened to a handle. It is stated by an early writer of New England that: "Before the Indians learned of the English the use of a more convenient instrument, they tilled their corn with hoes made of these [clam] shells, to which purpose they are well adapted by their size."

Another and rather strange use of shells is mentioned by early writers, which may serve to explain in part the presence of shells otherwise unaccounted for. The two valves of small mussels or clams, while yet connected were made to do service as tweezers for pulling out hair. Adair, speaking of the Choctaws among whom he traded, says

that "both sexes pluck all the hair off their bodies with a kind of tweezers, made formerly of clam shells." Strachey, Beverley, and Heckewelder also speak of the same custom, which had evidently come down from the prehistoric era.

It was for the purpose of forming them into ornaments, such as pins, ear ornaments, beads, wampum, gorgets, etc., that the ancient people of the Atlantic section made most use of shells. Large numbers of shell pins have been found in mounds; some of which are in the form of nails with very large heads, others with a smaller globular head. Various suggestions have been presented as to the use of these articles, but it is probable that the following quotation from Dumont's *Mémoires Historiques de la Louisiane* will give the correct explanation:

"There are still to be seen on the seashore beautiful shells made by snails (or limaçons), which are called burgaux; they are very useful for making handsome tobacco boxes, for they bear their mother-of-pearl with them. It is of these burgaux that the native women make their earrings. For this purpose they take the end of it, which they rub a long time on hard stones, and thus give it the form of a nail furnished with a head, in order that when they place them in their ears, they will be held by this kind of pivot (knob). For these savages have much larger holes in their ears than our Frenchmen; the thumb could be passed through them, however large it might be. The savages also wear around the neck plates made of pieces of these shells which are shaped in the same manner on stones, and which they form into round or oval pieces of about three or four inches in diameter."

It is evident from this that these pins were worn in the ears; whether used in any other way is not known. In the same quotation mention is made of shell gorgets, many of which are engraved with peculiar designs, and form the most interesting as well as the most important objects to the archæologist of all the shell articles which have been found in the mounds. Some of the designs, which are

simple and do not belong to any recognized type, may be the product of idle fancy, but the majority, especially those which appear to be conventionalized, as the serpent, face, and other figures, seem to have had for the people who engraved them and for the people who used them some special and well understood significance, as insignia, amulets or symbols.

Designating these articles by the designs they bear, they may be classed as follows: the serpent, spider, bird, scalloped disk, and cross; the human figure, and masks, or those shells formed to represent the human face. Those of most frequent occurrence in the mounds and ancient graves are the serpent, scalloped disk, cross, and mask. The serpent is a highly conventionalized figure representing a coiled rattlesnake, with the head enlarged and brought to the centre, the coil, with very few exceptions, being sinistral, or toward the left, and the engraving on the concave surface of the shell. These were probably worn at or had some relation to the dances or ceremonial occasions, where the serpent, always the rattlesnake, played a certain rôle. The scalloped disk was a circular gorget containing a conventionalized figure, consisting of a central rosette of three involuted lines, the outer portion of the disk being divided into some two or three zones, the outer zone being composed entirely of small circles.

Holmes is inclined to consider them calendars from the fact that similar disks were engraved on stone. With the exception of the single fact that the outer zone consisted usually, though not always, of thirteen circlets, there seems to be nothing to suggest the calendar. However, the calendar is certainly suggested by the bird gorget. The design consists of a central sun figure, included in a square, bordered by a strip formed of three or four parallel lines with a circular loop at each of the four corners. Outside of the square, resting on each side, is a bird's head, with the bill pointing to the left. There can be little doubt that the year and the four seasons are symbolized by this figure.

The type bearing the human figure is represented by but a few specimens, one from Missouri, the others from Tennessee. These, except the one from Missouri, represent two winged individuals with eagle claws, which appear to be in the act of fighting.

These engraved shells appear to form another link connecting the mound builders and Indians, and to present additional evidence that the builders of the mounds were Indians, the direct predecessors of those found inhabiting this eastern section at the arrival of the whites. What is of still more importance to the archæologist, their presence in a given locality appears to be an almost certain indication that that particular locality was occupied at some time in the past by one of two tribes. There are probably some exceptions to this rule, though it is believed there are but few.

Some of the designs on these shells, especially those with the winged human figures with eagle feet, remind us very strongly of figures in the Mexican codices. Possibly the designs may have been copied after figures painted or engraved on wood or shell which had found their way northward from Mexico through trade or as the result of raids. The conventionalized serpent figure appears to have been of local origin and confined almost exclusively to Shawnee habitats, in Tennessee and northern Georgia, and Cherokee territory in western North Carolina and eastern Tennessee.

The class of shell articles found in greatest abundance in the mounds and ancient graves is that including the various types of beads. The simplest form is the perforated small univalve, the species most commonly used being the *Marginella*, *Oliva*, and *Cyprea*. The most common variety is the discoidal or button-shaped bead with a hole through the middle. The cylindrical bead is also of frequent occurrence. Although articles of this class appear to have been in use among the mound builders of almost every part of the Atlantic section, they are found most frequently in the middle and southern districts. The extensive use of beads

as a currency among the Indians of the Atlantic coast is a well-known historic fact. Whether beads, also called "wampum," were used in the true sense of currency before contact with the whites is a disputed point and doubtful. Morgan says: "Wampum has frequently been called the money of the Indian; but there is no sufficient reason for supposing that they ever made it an exclusive currency, or a currency in any sense, more than silver or other ornaments. . . . There is no doubt that it came nearer to a currency than any other species of property among them, because its uses were so general, and its transit from hand to hand so easy, that every one could be said to need it." He admits, however, that "the use of wampum reaches back to a remote period upon this continent." Nevertheless, there is testimony on the other side. Thomas Morton, as far back as 1630, speaking of the Indians of New England, says: "they have a kinde of beads in steede of money to buy withal such things as they want, which they call wampampeak." It is probable from the several early statements in regard to its use that, although it may not have been a currency in the strict modern sense, it was the most common medium of exchange among the Indians in trading, and hence was seized upon by the whites at a very early day as a medium of trade with the Indians.

Articles of another class found in the mounds and ancient graves, which have given rise to much speculation and some controversy, are those of copper. As an indication of the number of types of this class we mention the following: axes, beads, bracelets, celts, chisels, crescents, cylinders, disks, gorgets, kettles, medals, plates, plates with impressed figures, finger rings, spindles, spools, ear pendants, and wire, also, chiefly from Canada, arrow points, spear heads, and knife blades. Besides these types many articles of anomalous forms have been discovered.

All the copper articles found in the mounds and graves may, as will be seen by a careful inspection of the specimens, be arranged in two, usually quite distinct, classes:

those which show by their forms, rough finish and unevenness that they have been hammered out with rude stone implements; and those which usually show as plainly by their finish and symmetry, except the celts and such thick articles, that they have been made from quite thin, smooth, and even sheets. If we examine, for instance, the bracelets, of which there are numerous specimens in the various museums and collections of our country, this difference will be found very apparent. Those of the one class are solid, about the thickness of the larger end of a porcupine quill, and roughly hammered out. Those of the other class are made of sheet copper, by first forming a cylinder of the required size and then binding it to the proper shape. However, the latter are usually found in graves or belonging to intrusive burials, though some have been found in mounds where there were no intrusive burials. Cylinders and cylindrical beads made from sheet copper have also frequently been found in mounds and graves. Conical ear bobs made of sheet copper were found in some North Carolina mounds.

Although it is probable that more copper articles have been collected in Wisconsin than in any other State, it is doubtful whether this statement will apply to specimens obtained from mounds, excluding those pertaining to intrusive burials. Numbers of articles of this class have been discovered in mounds of Iowa, Illinois, and West Virginia, also in mounds and stone graves of Kentucky, Tennessee, North Carolina, and northern Georgia. A number of copper articles have also been obtained recently from mounds in Florida and southern Alabama. Copper articles collected from burial places in Canada consist chiefly of arrow points, spear heads, adzes, celts, and knife blades, but copper ornaments appear to be comparatively rare in this section and consist chiefly of beads. Some of the knife blades found here are such close imitations of those of European make as to lead to the conclusion that they, like many other articles found with Canadian burials, are post-Columbian.

The so-called chisels are nothing more than slender celts, of which class quite a number of specimens are contained in the Wisconsin collections; some of them too smooth and symmetrical to have been made with stone implements. Of the few crescents discovered, two appear to have been cut into this shape from a sheet and placed on the breast of the deceased at the time of burial; two others had evidently been beaten out into the form of crescents with stone hammers. The copper cylinders are probably large beads; the largest varying from an inch and a half to five in length, and from one-fourth to a half inch in diameter were found in a North Carolina mound in which there were iron or steel articles indicating contact with Europeans. The cylinders, some of which retained fragments of the leather thong on which they had been strung, were made from smooth sheet copper. A strange fact in regard to one of the iron implements found in this mound is that it is in the form of a small, rather thin wedge, apparently hammered into shape with stone implements. The Indians appear to have taken up the blacksmith's trade ere they had been fully supplied with the white man's implements. The few articles designated disks are apparently one part of the so-called spools or spool-shaped articles. These are formed of two disks or flattish cones united at the apices, thus giving the appearance of a spool. They are made of thin copper and in two instances they covered wooden disks. It is supposed that they were worn in the ear. Few copper rings have been discovered, some of which are evidently post-Columbian, while others appear to be of genuine aboriginal manufacture. The few articles designated spindles, obtained from mounds, are long and slender, showing a square cross section, the length nine to eleven inches, and the diameter only about one-fourth of an inch; pointed at both ends or, in some instances, one end chisel-shaped.

Plates of copper hammered into comparatively thin sheets with the rude implements the natives possessed and clearly prehistoric have been found in mounds in several different

localities in the Atlantic section, but these can be readily distinguished from those of European manufacture. However, the most interesting as well as the most important articles in the study of the archæology of the Atlantic section are some obtained by W. K. Moorehead from a mound in Ross County, Ohio; and others by J. P. Rogan, the agent of the Bureau of Ethnology, from a mound in Bartow County, Georgia.

In the mound opened by Moorehead, there were at the head of the principal personage buried therein imitation elk horns made of wood and neatly overlaid with copper. These artificial horns measured twenty-two inches in length, and were fitted to a copper cap or covering over the skull. It can certainly be claimed for this that it is unique, as no other article of the kind has been discovered. However, wooden articles of other forms, overlaid with copper, are not unknown among the mound relics, as some have been already mentioned, and Clarence B. Moore makes mention of them in his work on the sand mounds of Florida. In addition to this copper headgear of the chief personage in the mound excavated by Moorehead, there were copper plates on the breast and stomach, and also at the back. The copper had preserved the bones, and, as Moorehead informs us, a few of the sinews, also traces of cloth similar in texture to coffee sacking. Spool-shaped articles of copper, besides specimens of other materials, were also found with or near this skeleton. The skulls in this mound, of which there were several, were of two types, the long head (dolichocephalic) and the short head (brachycephalic). It is probable that this mound was post-Columbian.

The most puzzling articles found in the Atlantic section are the copper plates obtained by Rogan from the third mound of the Etowah group, in Bartow County, Georgia. These consist of thin plates of copper, with impressed figures. One represents a human figure partly clothed in the skin of an eagle, or some other large rapacious bird; the bird's head is over the human head, and the wings spread out from the back of the shoulders. The individual holds

a human head in his left hand, and the figure, as a whole, reminds us of figures in the Mexican codices. The positions of the body and limbs show that the person represented is dancing, and the severed head in his hand indicates that he is celebrating his victory over and slaughter of some enemy. The conception is entirely consistent with the Indian character, but the puzzle arises when we undertake to answer the question Was this the work of a native artist? If not, was it made by a European workman? And how are we to account for its presence in this mound?

It can be stated with reasonable certainty that this mound group was visited by De Soto in his disastrous expedition through the Gulf States. Garcilasso de la Vega, one of the chroniclers of this expedition, speaking of Guaxule, an Indian town evidently located in what is now northwestern Georgia, says: "The chief, whose name was also Guaxule, came out with five hundred men to meet him, and took him into the village, in which were three hundred houses, and lodged him in his own. This house stood on a high mound similar to others we have already mentioned. Round about it was a roadway sufficiently broad for six men to walk abreast." Now, it happens that the large mound of this Etowah group has a roadway winding up the side of sufficient width to allow six men to walk abreast on it, and that no other mound answering the description is to be found in northern Georgia or in all that southern section. It has been suggested that the mound referred to is one in White County, northeastern Georgia, but this one will by no means answer Garcilasso's description, and is not in the proper section to agree with the several chronicles. It is therefore reasonably certain that the Etowah mounds mark the locality of Guaxule, which was visited by De Soto. Hence it is not surprising that a burial mound of the group, which may have been built after De Soto's visit, should contain indications of contact with Europeans.

This, however, fails to solve the problem, unless we assume that De Soto had these plates, among other things,

prepared before starting on his expedition, for distribution among the Indians. This, however, is by no means likely, as this leader made no effort to placate the natives, relying wholly upon force and the use of his superior weapons. That the plates were prepared by or after contact with Europeans must be admitted. There is an account given by Adair (*History of the Indians*) of some copper plates found in the adjoining section of Alabama, which were highly prized by the Creeks, and exposed to view only during one of their yearly ceremonies, and then borne only by persons specially appointed to this duty. These may possibly throw some light on the subject, though the description fails to give their origin.

Other figured copper plates have been found in mounds and graves, as the figure of an eagle with spread wings from mounds in Illinois and Georgia; and another from a stone grave in southern Illinois, bearing a design representing dancing figures. It is worthy of notice that the dancing figures on the latter plate hold in their hands something resembling very closely that in the right hand of the figure on the plate from the Etowah mound.

It is generally believed by those qualified to judge that most of this copper, which was not introduced by Europeans, was obtained from the Lake Superior mines. Clarence B. Moore has had some of the copper of objects he obtained from Florida mounds carefully analyzed, with the result that it has been pronounced Lake Superior copper. It is possible that the mound builders of an early day obtained some drift copper. There is positive evidence of prehistoric mining at Keweenaw Point and Ontonagon, and mining experts who have studied this evidence decide that the work done was not beyond the capacity of Indians and was most likely done by them: that nothing more was done than simply expose the masses, beat off particles, or, in some cases, heat the mass by building a fire on it, and then suddenly cooling it by throwing cold water over it.

The articles of stone found in the various collections and museums present an almost endless variety of forms,

in regard to which we can add here little more than a brief mention of the leading types. The most common type, in fact the most common type of all prehistoric artefacts, is that known as the arrow point. Specimens of this type have been and are still being found in all parts of the section, on the surface of or slightly imbedded in the ground. A few have been found in mounds, but they do not appear to have been of sufficient value to form offerings to the dead. Although the pointed triangle was the prevailing type, this was varied indefinitely in general form to the crescent, and in the details also. The spear head was similar in form, but larger; however, the boundary line between the spear head and the larger arrow points, on the one hand, and between the spear head and knife, on the other hand, is not well defined and is often difficult to determine in classifying collections.

Other types of stone implements are hammers and axes, usually with a groove around the middle to retain the withe in hafting. The axes are generally somewhat of the form of a thick, blunt, ordinary ax, and occasionally with two grooves. Stone celts are wedge-shaped and of two classes, those designated polished and those known as chipped celts. Some of the former are pecked while others are smoothly polished. These must have formed a very important class of implements with the prehistoric inhabitants of the mound district if we judge by their number and distribution, as they have been found in all parts of the section in mounds and graves as well as in the soil, often in considerable numbers. Their number was no doubt due to the variety of uses to which they were adapted. Although stone pipes have been found in considerable numbers their distribution is limited chiefly to the middle districts, as western North Carolina, Tennessee, Ohio, Illinois, and Iowa. They are generally similar in form to the pottery pipes heretofore described. The monitor pipes are mostly of stone, and quite a number of the long-stemmed pipes are made of steatite.

Other stone articles used by the mound builders were discoidal stones, some of them wheel-shaped, biconcave, and highly polished. They are supposed to be what the early writers call the "chungke stone" used in playing the "chungke" game.

Among the most interesting discoveries of stone articles of the mound area are the few images representing the human form. All that are complete are sitting figures, though the lower limbs are not usually shown; one, however, has been discovered in Tennessee in which the lower parts are more completely worked out. It is somewhat strange that the legs of this image are arranged in the Oriental instead of the Indian fashion as those of the other images seem to be. The specimens of this class appear to be limited geographically to Georgia, Tennessee, and southern Illinois. One taken from a mound in Union County, Illinois, measures fifteen inches in height; another found by the side of a skeleton in a mound of eastern Tennessee is a little smaller, but in both the face is sloped backward at a considerable angle. Another plowed up in a field near the Etowah group represents a sitting female. The bust of another discovered in a mound of this group appears to be of a different type from the others. In most of these the oblique or sloping face indicates a modelling after the artificially flattened head. With one exception these images have been found in the stone-grave area.

The use of copper by the mound builders has resulted in a number of instances in preserving specimens of their textile fabrics. In their anxiety to have their dead well equipped with ornaments as well as implements for their journey in the spirit land, it was not unusual for them to wrap copper articles, which were considered very precious, in pieces of their woven fabrics. The cloth was thus preserved by contact with the copper. Examples of this kind have been discovered in Iowa, Illinois, Ohio, and Georgia. Woven fabrics have also been found in caves of Kentucky, in some instances with mummified or dessicated bodies.

A fine example was obtained by an agent of the Bureau of American Ethnology from a rock shelter of eastern Tennessee. This, however, had not been preserved by contact with copper but with the nitrous salts of the earth. With it was an almost complete mat of split reeds ornamented by a submarginal colored stripe. Remains of charred cloth have also been discovered in mounds. The forms of the meshes of some types of textile fabrics of the ancient inhabitants of the section have been ascertained by studying certain designs on pottery, which seem to have resulted from the pressure of cloth on the surface of the vessels while yet comparatively soft. Matting has been found in several mounds, but usually preserved by contact with copper or by being charred. Bone implements, such as needles, awls, punches, and others, some of which seem to have been used as gouges, and some intended for other uses, are of occasional occurrence in mounds and ancient graves.

Among the articles discovered are two copper hawk's bells, found beside the skeleton of a child. These indicate contact with Europeans, yet it is more than probable that the child by whose remains they were found was buried at a much later date than other bodies which had been deposited in the mound. The mound in which they were found seems, in fact, to have been a burying place for the village for a long time; and judging from a succession of burned clay beds in the central portion, we conclude that additions were made to it from time to time. Be this as it may, we have evidence here that this mound must be attributed to the Indians. The list embraces articles of pottery, discoidal stones, stone pipes, engraved shells of two varieties (the serpent and the mask), polished stone celts, stone gorgets, bone implements, shell pins, shell beads, etc.—all, except the copper bells, being articles common to the mounds of the middle districts.

One of the very important discoveries made during the mound explorations carried on by the Bureau of American Ethnology was that of the remains of houses in Arkansas

mounds, alluded to in a previous chapter, but not described. Observing in the low mounds of Arkansas beds of hard burnt clay containing impressions of grass and cane, the explorers were led to the conclusion that these beds resulted from burning houses which occupied these low mounds, and that the so-called bricks often found in the mounds were fragments of burned plastering which lined these dwellings. This conclusion was verified by the discovery in some two or three instances of sufficient remains to enable them to trace the outlines of the buildings and learn something of their mode of construction. In each case these consisted of three square rooms, two in front and one behind, the latter being in the rear of the middle; all were about the same size, the average being some twelve feet square. From the burnt fragments of the walls it was apparent that they had been formed by planting posts a little less than two feet apart; then lathing them with cane so interwoven that by interlacing twigs the whole was retained in position until plaster was applied both inside and out. However, they seem to have been without chimneys of any kind; the floor being covered with hard-beaten clay, the fire was built on this, in the centre or where most convenient, being sometimes placed near one side. These dwellings were evidently one story in height. Professor Swallow was the first explorer to call attention to the remains of houses in mounds. He discovered in a mound of southeastern Missouri the remains of a room which had not been entirely destroyed by fire; a part of it was yet standing.

Du Pratz, who was in this southern section at an early date, describes the form of Indian houses and the mode of building. According to this description, they were square, or four-cornered; the walls made of upright posts, strengthened by some horizontal poles and interlaced sticks, and then plastered with mud and moss. The roof was somewhat dome-shaped, the corner posts being longer than the others and brought together in the centre; it was thatched with long grass.

These facts, although they seem to bring the construction of the mounds of eastern Arkansas down to comparatively recent prehistoric times, in some instances to post-Columbian times, are nevertheless of much interest to the archæologist. The works can be attributed with reasonable certainty to the Quapaws, a Siouan tribe that occupied this immediate section at the time De Soto visited it. In the second place, in connection with the articles found in the mounds, they show that the latter belong to one era, that the authors of all belonged to the same grade of culture and had precisely similar customs and arts. When the further fact is added that no remains are found in this section which are dissimilar in type or show a different culture or culture status, we are forced to the conclusion that the people whom De Soto, and the French who followed him, found in this region must have occupied it for a long time.

## CHAPTER XIX

### *ENCLOSURES AND OTHER MURAL WORKS*

Among the most important local antiquities of the Atlantic section are those usually known as "enclosures." These are walls of earth or stone wholly or partially surrounding an area large or small. In some instances works of this type enclose an area sufficient for a large-sized native village, or the camping ground of a moderate-sized army. It was chiefly these works and the pyramidal mounds, which call to mind the fortifications of the Old World and the pyramids of Egypt, that gave rise to the theory of a civilized, mound building race distinct from the Indian.

Enclosures are found not only on level land where any form and size desired might be adopted, but frequently on bluff headlands and elevated points, here and there encircling the summit of an isolated hill, or a steep-sided spur. It is so apparent to even the casual observer that works of this class built on elevated localities were intended for defence that the name "hill forts" has been applied to them. As a general rule enclosures are irregular in outline, especially the hill forts, which are governed by the topography. On level areas the form is generally approximately circular, or irregularly rounded, though some are square or rectangular and a few are octagonal.

One class of remains in the Huron-Iroquois district consists of enclosures with earthen walls, which vary in size from those of small dimensions to those of sufficient size to

contain a village, and are usually irregularly circular or polygonal, though some are rectangular in outline, often with an outer ditch. Rev. W. M. Beauchamp, who has devoted much attention to the study of the archæology of this district, distinguishes between those which appear to be simply the decay of stockades, which are usually polygonal, and those which had an original embankment. Works of both kinds as well as defensive walls occur in considerable numbers both on the Canadian and the United States sides of this district. All, however, are attributed by archæologists to the Huron and Iroquois tribes which formerly inhabited this district.

E. G. Squier, who carefully studied the antiquities of Ohio, and arrived at the conclusion that they were due to a people occupying a much higher culture than the Indians, subsequently entered upon the investigation of the ancient works of New York, little doubting that he would arrive at a similar conclusion in reference to their origin. The result of this examination was, however, wholly different from his expectation as he became convinced that they were attributable to the Iroquois who had inhabited this section.

The few enclosures which have been examined in the Michigan peninsula are similar in character to those of New York. These are located in Ogemaw County, though careful inquiry would doubtless bring others to light. Those known as the Rifle River forts are irregularly circular earthen walls with an inside ditch, and are comparatively small, the diameters varying from two to three hundred feet. In southern Illinois and southeastern Missouri, more especially in the latter, the form is usually rectangular, without any accompanying ditch. The enclosed surface is generally dotted over with little earthen circles, which are wigwam sites, and here and there a mound. Sometimes the wall of the enclosure extends around but three sides, the fourth being the bank of a stream or the margin of a swamp. In Arkansas, and occasionally in southeastern Missouri, the form is irregularly semicircular, the ends resting on a stream,

lake, or bayou, without an accompanying ditch. Those of Mississippi, so far as described, are in part similar to those of Arkansas, and in part to those of southeastern Missouri.

The enclosures which have attracted most attention, and have been most discussed by archæologists, are those of Ohio, which have been brought before the public by the writings and drawings of Atwater and more especially by the classic work of Squier and Davis, which forms the first volume of the *Smithsonian Contributions*. These are of two quite distinct classes: one, the so-called "hill forts," which are fortified elevated points; and as their outlines are governed by the topography, are irregular in form. The most noted as well as the largest work of this type is that known as Fort Ancient, in Warren County. This follows the outlines of the top of the spur or extension of a bluff some two hundred and fifty or three hundred feet high, which here overhangs Miami River. The area embraced, which consists of two unequal divisions, is only seventy-five or eighty acres, but the length of the wall, which follows all the turns and zigzags of the margin of the bluff, is a little over three miles and one-half. As this is one of the best preserved monuments of Ohio, its construction can be carefully studied. The wall, being located where it is not liable to be disturbed by the plow, is uninjured save where the turnpike cuts through it, and at certain points where water has broken through and formed ravines since it was abandoned. It is composed in part of stone, but chiefly of earth thrown outward on the crest of the slope, thus forming an inside ditch. As a rule, the wall is strongest and highest at the points of easiest approach, and at some places the outside slope has been artificially steepened, proving beyond any reasonable doubt that the work was one of defence.

Warren K. Moorehead, who, with a corps of assistants, devoted considerable time in 1889 to surveying and thoroughly exploring this ancient work and making such excavations as were deemed necessary, comes to the conclusion

that it was a defensive work used at times as a place of refuge by some large tribe of Indians, and that at intervals there was a large village situated within its walls. Assuming that its use as a village was only temporary, we see no reason to object to this conclusion. Another conclusion reached, in which we think he is correct, is that the northern and smaller division at the extremity of the spur is older than the larger portion. The division into two unequal parts is by a somewhat narrow isthmus and approaching walls; it is the smaller of these two divisions to which Moorehead applies the name Old Fort. We can also agree with this explorer and author when he expresses the opinion that the work was built before the Shawnees had settled in the Scioto valley, about 1750—not 1787; but we must object most seriously to the conclusion that it was built by the Mandans. He estimates that nine hundred years would be a fair statement of the age of the work.

There are in Ohio, especially in the southern part, several hill fortifications of the same general character as Fort Ancient; that is, defensive works of naturally strong positions, where the outline and course of the wall are governed by the topography. The most important of these are those known locally as Spruce Hill Fort, Fort Hill, the stone fort at Glenford, Perry County, and Fortified Hill. However, the Ohio enclosures which are of most interest to archæologists and antiquaries are those classed under the name "geometrical works." These works, which are always composed of earth alone, and are found only on level, usually rich land, are limited almost exclusively to the valleys of Scioto, Muskingum, and Little Miami Rivers. The most important of these are those at Newark, Licking County, the Liberty Township works, eight miles south of Chillicothe, High Bank works, four miles below Chillicothe, Hopetown works, Frankfort works, works east of Chillicothe, Cedar Bank works, Mound City, Dunlap works, Hopewell works, Pricer works, and the Baum works, in Ross County.

As the description of a few of the more noted examples of this type will convey a correct idea of the class, we turn first to the Newark group in Licking County, which has been so often noticed by writers. Our object, however, in selecting these works—the most important antiquity of the Atlantic section—as an illustration of the class is to direct attention particularly to features not often dwelt upon, which are nevertheless the most important relating thereto.

The group consists of circles, squares, octagons, and enclosed avenues, spread over an area of some four square miles. These structures are arranged in two divisions, connected by two enclosed avenues. The eastern portion, beginning with a large circle at the south end, known as the Fair-ground circle, and extending northeast, is connected by a wide, broken avenue first with a square, and this is followed in the same direction by a complicated series of walls and avenues. The western portion consists of a circle, connected by an avenue with an octagon. The avenues are in all cases flanked by walls, which, like all those of the entire group, are wholly of earth. Squier and Davis, who present in their work a copy of Colonel Whittlesey's survey, which gives the general features of the group with considerable accuracy, though failing in exactness as to some of the details, give the diameters of the Fair-ground circle as 1,250 and 1,150 feet, and the circumference of the Observatory circle as 2,800 feet.

As this group has been frequently figured and described, we limit further notice to the resurvey made by the agents of the Bureau of American Ethnology and the somewhat remarkable facts brought out by that survey. It was found by this resurvey that the diameters of the Fair-ground circle, instead of being "1,250 and 1,150 feet respectively," thus indicating an elliptical form, are 1,189 and 1,163 feet, measuring from the middle of the wall on one side to the middle of the wall on the other, showing a close approximation to a true circle. According to Squier and Davis, the area of this circular enclosure is somewhat over 30 acres,

which agrees with the resurvey. The wall varies in width from 35 to 55 feet, and the height from 5 to 14 feet. The ditch varies in width from 28 to 40 feet, and in depth from 8 to 13 feet.

Although the regularity and close approximation of this work to a circle, considering its size, show considerable ability on the part of the people by whom it was constructed, the still closer approximation to true geometric figures in the Octagon and Observatory circle excite our wonder and present questions difficult to answer satisfactorily. Take, for example, the Observatory circle. It is connected by short parallels with the Octagon. Most of the south half is yet in the original forest and has never been injured by the plow, but the north half has been under cultivation for many years; yet the wall is quite distinct throughout, being 3 feet high at the lowest point and averaging between 4 and 5 feet; the width varying from 35 to 45 feet. A careful survey of this circle and other parts of this group was made by the agents of the Bureau of Ethnology in 1888. By this survey it was found that the greatest diameter, measuring from the middle of the wall on the one side to the middle on the other, was 1,059 feet; and the shortest diameter 1,050 feet, the mean of which is 1,054.5 feet. It appeared, however, by trial on the plat that the nearest approximate circle had a diameter of 1,054 feet, and that the widest divergence between the line of survey and the circumference of the true circle at any point was but 4 feet. The chords in the survey were 100 feet each; the stations were on the top of the wall, as near the middle line as could be ascertained by measurement and judgment, and the stakes were all set before the bearings were taken.

The Observatory is an abrupt enlargement of the wall in width and height at the point directly opposite the opening to the Octagon. The aggregate length of the chords surveyed is 3,304 feet, while the circumference of the approximate circle is 3,311 feet. If the difference between the chords and the subtended arcs (0.1508 of a foot to each

100-foot chord) be added to the sum of the chords it gives 3,309 feet, a difference between the totals of but two feet. Before commenting on this remarkably close approximation to a true circle, reference will be made to the measurements of the Octagon and the Square.

The so-called Octagon, although a symmetrical eight-sided earthwork, is not a true octagon in the sense that all its angles are equal, and that all its corners would touch the circumscribing circle. The southern portion remains almost uninjured, being still more or less covered by the original forest growth. The walls of the other portion have been considerably worn by the plow, though they are still quite distinct, the height not being less at any point than two and a half feet, and the average somewhat over four feet. The walls do not connect at the corners, an opening of from twenty-five to fifty feet being left at each, opposite which, immediately on the inner side, is a mound about the same height as the wall.

The angles formed by the diagonals and diameters where they cross in the centre are so nearly right angles as to call for special notice. For instance, the angles at the crossing of the diagonals differ but ten minutes from true right angles; while those at the crossing of the diameters differ but two minutes. The inner angles at the intersections of the middle lines of the walls, that is to say the angles of the Octagon, are also correspondingly uniform.

In a true geometrical eight-sided figure the opposite sides should be parallel. In this work the widest variation from parallel is less than two degrees. The area, including the inner half of the walls, is a little more than forty-one acres.

According to the resurvey of the Square by the agents of the Bureau of Ethnology, the measurements of the sides and angles were as follows: The lengths of the four sides were 928, 926, 939, and 951 feet; the difference between the extremes being only twenty-five feet; and the greatest variation of the angles at the corners from a true right angle fifty-seven minutes—a little less than a degree.

These measurements reveal such a close approximation to true geometrical figures that students have been puzzled to find a satisfactory explanation of the methods adopted by the native builders in laying them off on the ground, considering their large size, each enclosing a sufficient area for a small farm. A quite recent writer, who has studied somewhat carefully the Ohio enclosures, says that no instruments beyond stakes and lines are required in marking out any of the enclosures, large or small. A circle, it is true, may be accurately laid off with a line of sufficient length, if secured at one end by a stake, while the other end is carried around, provided there are no obstructions to prevent the free sweep of the line. And even had the ground been partially covered with the forest growth, points in the circumference might have been determined by clearing pathways from the centre, drawing the line taut and setting stakes at the outer end. By repeating this at short intervals the stakes would mark the circumference with sufficient accuracy to fill out the spaces with but slight variations from a true circle. MacLean contends that there is evidence that the last-mentioned method of laying off a circle was adopted in some instances by the mound builders, as he finds in one instance what he believes to be an incomplete circle, the points being marked on the circumference by small heaps of earth.

That the mound builders, who could manufacture cloth, could make a cord of sufficient length to describe the Observatory circle will be admitted; or as Fowke has suggested in his *Archæological History of Ohio*, they might have cut thongs from raw-hides and tied them together to form a cord. However, a cord of such thongs one hundred and seventy-five yards in length would have been somewhat cumbersome.

The construction of a square without instruments would be more difficult. Fowke suggests, in the work mentioned, that this might be done with cords by the following method. Lay off a straight line of any desired length—say from

point A to a point C: fix a stake at the middle. Then procure two cords of exactly the same length, which are somewhat longer than half the line A C. Stretch these cords from A and C toward the middle until their ends meet. Then draw a line from the middle stake through this meeting point equal to half of A C. Extend this line on the opposite side of the original line equal to the half of that line, and then join the extremities of the four arms thus formed. These connecting lines will form a square.

That the builders of these enclosures had some means of forming a square very nearly geometrically correct is proved by the fact that they did construct such squares. But that the somewhat complicated method suggested by Fowke, with the knowledge of mathematical principle implied, was employed by the builders is very doubtful. At any rate, it would have been as easy and as simple to have run an indefinite straight line and then raise perpendiculars on it at the distance apart they desired the sides of the square should be. That they had some method of laying off, on the surface of the ground, one straight line perpendicular to another seems to be evident. The eye alone, although well trained, could not one time in a thousand lay off a square of the size and approximate accuracy of that of the Newark group. Nor is this the only square of the Ohio enclosures which approximates a true geometrical figure, as the square of the so-called Baum works on Paint Creek in Ross County, the sides of which average one thousand one hundred and seventeen feet in length is even a closer approximation to a true geometrical figure than that of the Newark group. In this case the evident variation in the length of the sides from the average is only twelve feet; and the greatest variation at the corners from a right angle is only forty-seven minutes, or about two-thirds of a degree. It is difficult to explain the method used by the ancient builders to lay off a square of this size unless they had learned how to draw one line perpendicular to another on the ground.

Another suggestion as to the method of forming a square, is by first describing a circle; then drawing two diameters one at right angles to the other, and join their extremities by chords. This would, perhaps, be the easiest method which a people without means of accurate measurement, and where a given size was not required, could adopt. But this method also necessitates drawing one straight line perpendicular to another. It is evident, therefore, from the facts stated, that the builders of these ancient works could for measuring make and use cords or ropes between five and six hundred feet in length; and that they had learned how to draw one straight line perpendicular to another. That they could construct two lines of wall parallel one to the other, both straight and curved, is shown by the frequent occurrence of such parallel walls.

The construction of the octagon must have presented to the ancient builders a more difficult problem than the square. Fowke suggests, in the work heretofore referred to, that this might be done by first forming a square, then prolonging the diameters as far beyond the sides as desired, then by connecting their ends the octagon would be completed.

This supposition would seem to imply that they had first marked off on a small scale a square, and experimented as to the proper extension of the diameters beyond the sides. That they were capable of doing this is not doubted, but to have used their model in forming the larger figure they must have kept the proportions of the parts. That the size of the enclosure was only approximately determined beforehand appears to be proved by the variation in the octagon at the High Bank works. In this instance the enclosure, when constructed, seems to have been larger than the original plan, or than intended, as it overran the space allowed and forced the builders, because of a steep descent, to draw in the southern corner, thus marring the symmetry of the figure. As there was ample space of level ground, it seems most likely that the builders of the latter octagon made a mistake in carrying out their plan.

A second question which arises in regard to these Ohio works, though we are not aware that it has been brought forward, is, why are these level ground enclosures so much nearer true geometrical figures than those of any other district of the mound area? Although the Southern States present the most numerous and, with a single exception, the finest examples of pyramidal and terraced mounds, as well as numerous enclosures, yet none of the latter show any such approximation to true geometrical forms as the works of Ohio. The nearest approach elsewhere to this regularity is found in a few rectangular enclosures in southeastern Missouri.

Had the mound builders of Ohio made a greater advance in culture than the natives of other parts of the Atlantic section? As it is maintained that the authors of the ancient works of this section were Indians, the ancestors of those found inhabiting the region at the advent of the whites, it must be conceded that the Ohio works mentioned were built by Indians. Had the Indian tribes who formerly inhabited this portion of what is now Ohio reached a more advanced stage of culture than those of other districts? The construction of these geometrically correct earthworks and the nicely carved image pipes would seem to justify an affirmative answer to the inquiry. It is certain that no portion of the mound-building area afforded better opportunities for advancement in culture than the Scioto valley, assuming, as seems to be evident, that the people relied to a large extent upon the cultivation of the soil for their food supply. With the exception of one group on the Kanawha and two others in Greenup County, Kentucky, all the principal lowland enclosures of the type mentioned are confined to the valleys of Scioto, Muskingum, and Little Miami Rivers, and the type is almost as well marked among the enclosures as the effigies of Wisconsin are among mounds.

The most important question regarding these enclosures is that which relates to the purpose for which they were built. Numerous suggestions and explanations have been

offered, but it cannot be said that any are entirely satisfactory. In the early days when attention was first drawn to antiquities of this character, these, as well as the hill fortifications, were called "forts," the belief being that they were defensive works. However, after they had been more carefully examined, and it became apparent that many at least of the level ground works were not adapted to this purpose, it was assumed that they were built with reference to religious and ceremonial purposes. Impetus was given to this idea by Squier and Davis, who strongly advocated the theory in their work, *Ancient Monuments*.

Morgan, who was a decidedly original thinker, advanced the strange idea that the walls of these enclosures, so far as they were in straight lines, were the foundations for long houses. "They [the mound builders]," he remarks, "might have raised these embankments of earth, including rectangles or squares, and constructed long houses upon them, which, it is submitted, is precisely what they did." On the other hand, it has been suggested that they were game preserves, into which wild animals suitable for food were driven and confined until needed. Perhaps the most plausible theory advanced is that the walls of the larger enclosures were built around villages as defensive structures. As a modification of this view, it has been suggested that where a circle and a square, or a circle and an octagon, are combined, that the village was in the square or octagon, while the circular wall surrounded the corn field or cultivated patch.

Neither of these views is satisfactory; in fact, the theory that they were game preserves, as well as that advanced by Morgan, may be dismissed without further consideration. It is probable that they were built for more than one purpose, certain features having reference to religious and ceremonial uses, others being intended for places of official meetings, while the chief structures were built for defence against the attack of enemies. Lucien Carr is near the true explanation when he says, in his work on the *Mounds of the Mississippi Valley*, that: "A few of these enclosures may

possibly owe their origin to a religious sentiment, but of a large majority of them it may be safely said, in view of recent investigations, that they were simply fortified villages." The very common custom among the Indians of surrounding their villages by walls or fortifications of some kind, observed by the first European explorers, would seem to furnish the best explanation of most of the enclosures found throughout the mound area.

The troublesome point in considering the enclosures as defensive works is found in the following facts. That the earthen walls alone, which did not exceed five to eight feet in height, would not form an effectual defence on level land, where approach could be made at any point, must be conceded. If the walls were surmounted by stockades, the building of the walls would seem to have been useless labor, and it is certain that the decay of stockades would not have left the walls as found. Moreover, it is highly improbable that the roadways or long lines of parallels, as at the Newark works, were stockaded. The presence of "hill forts," which are certainly defensive works, in the same section, tends, if having any bearing on the question, toward the conclusion that the level ground enclosures were not built chiefly for defence.

The ancient earthen enclosures at Aztalan, Wisconsin, present some unusual features, which may serve to throw some light on the use of works of this class. Here, on a gently sloping area, was, among other works, an oblong enclosure of considerable extent, with a double wall in part: that is to say, there were two walls around at least a side and the two ends. But the peculiarity of this type consists of buttress or moundlike enlargements at regular distances along the walls. Another enclosure of this type occurs in Hardin County, Tennessee, near Savannah, which, like that at Aztalan, seems to have a double-bastioned wall, or, perhaps more correctly, two walls. A third example occurs in Vanderburg County, Indiana, though in this case there is but a single wall. In this work the circular enlargements

projected outward beyond the line of the wall from twenty to thirty feet, and the distance from one enlargement to another varied from about one hundred to one hundred and twenty feet. This type seems to have been developed from the chain mounds heretofore mentioned as occurring in southwestern Wisconsin. If so, then we must assume that these enlargements were foundations for houses, strange as it may seem to build houses on walls surrounding a village.

Dr. Lapham tells us that he found in excavations made in the walls at Aztalan masses of burnt clay and other evidences of fire, and, under the influence of the theory then so strongly prevalent that the mound builders offered human sacrifice, came to the strange conclusion that "the clay was mixed with straw and made into some coarse kind of envelope or covering for sacrifices about to be consumed. The whole was probably then placed on the wall of earth, mixed with the requisite fuel, and burned. The promiscuous mixture of charcoal, burned clay, charred bones, blackened pottery, etc., can only in this way be accounted for." Examining the facts given in his work on the *Antiquities of Wisconsin*, we are astonished to find how small a basis he had upon which to build such a theory. The burned remains were probably those of a plastered house or wooden structure.

Thomas states that, from personal examinations of this group of works, he is inclined to accept Lapham's suggestion that these lines are series of mounds united by embankments. At any rate, those at Aztalan do not appear to have been defensive. There are, in fact, few defensive works in Wisconsin or, indeed, throughout the effigy mound district. It may be stated as possibly suggestive that the Aztalan fort is in what was formerly Siouan country, and that the Quapaws, who pertain to the same stock and whom De Soto encountered in Arkansas, are said to have dwelt in former times on the lower Ohio, possibly in the locality of the group in Vanderburg County, Indiana.

Notwithstanding all that has been written in regard to the enclosures in the Atlantic section, and the repeated examinations, measurements, and illustrations of at least those of Ohio, the investigation is as yet incomplete. More excavation is needed, a more complete classification and comparison with early historical notices of Indian fortifications is necessary, before they can be made to yield up the secrets they have so long and so faithfully guarded. The dividing line between those intended primarily for defensive purposes and those, if there are any, intended for ceremonial purposes has not as yet been satisfactorily drawn.

If we begin with the small circles from thirty to sixty feet in diameter, which are now obliterated from the Ohio groups, though quite numerous when Squier and Davis made their survey, but which are still visible and quite numerous in some of the enclosures of southern Illinois and southeastern Missouri, we know from abundant evidence that they are wigwam sites. By their presence in some instances on older works, we have evidence of a second wave of population, of the abandonment by a former people of the area, and of the occupancy by another. Examining the Newark works and one or two of the other level land groups of Ohio, we notice some circles which, though small, are nevertheless too large for wigwam sites. These, in some instances, especially in the Newark group, have the surface on one side slightly raised, giving it somewhat the appearance of a stage. In other cases there is an inside ditch and occasionally an included mound fills up most of the inner space. These are from one hundred and twenty-five to two hundred and fifty feet in diameter. There is always a single opening which is seldom, if ever, on the west side. Excluding those containing a mound and those with an inside ditch, the others, especially those which have the stage-like earthen platform on one side, may mark the sites of council houses, or of inclosed areas used for similar purposes as the estufas among the Pueblo tribes. With inner circles of upright posts for supports, as in the houses of the

Mandans, the size would not be excessive, otherwise they may have been open structures, somewhat as the ceremonial structures of the Menominees, described by Dr. J. W. Hoffman. But the use and object in building those with an inside ditch baffles imagination. When we advance to the larger enclosures, we have, as heretofore stated, no other accepted explanation than that of defence, which does not appear to apply satisfactorily to all.

Another class of ancient works worthy of a passing notice in this rapid survey is that including the ancient mines and quarries. These were of stone, especially of flint for arrow points and other implements, of steatite for pipes and vessels, and of copper. The most noted ancient flint quarries were those in the great flint deposits in Licking and Muskingum Counties, Ohio. Mile after mile of the ridge and its projecting spurs are pitted with excavations. Sometimes there is only a single pit within the area of a large field; again the entire surface has been upturned continuously over several acres. According to Fowke, from whose work our description is drawn, the pits vary from twelve to eighty feet in diameter, and from three or four to at least twenty feet in depth. Continuous trenches, in some instances, are from fifteen to twenty rods in length. The pieces of flint to be used in making implements appear to have been obtained by exposing the surface of the stratum, heating it by a fire built thereon, and throwing cold water on it, causing it to crack; heavy stone hammers were then used to break off pieces.

The copper mines along Lake Superior which have become of so much importance in recent years, were, as is well known, worked to some extent by the Indians in prehistoric times; in fact, it is claimed by more than one prominent investigator that a large portion of the copper articles found in mounds, from Wisconsin to Florida, came from these mines. "Doubtless," says Dellenbaugh (*North Americans of Yesterday*, 288), "most of the copper used on the North American continent prior to the discovery was derived from these mines and distributed through the

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Ruin of cliff dwellers' stone house in Mancos Cañon, Colorado. *From a photograph supplied by Professor W. J. McGee.*

channels of aboriginal trade." The natives seem to have worked their way down into the rock which carried native copper and broke off nodules and fragments as they proceeded. Some of the pits were eighteen or twenty feet deep, and in one case a huge boulder of copper was found lying on oak supports several feet from the bottom. This mass was denuded of every projection the stone hammers could break away. There were also in various parts of the section stone and mica quarries.

Another type of antiquities which has excited considerable discussion is that designated "garden beds." These are certain surface indications found chiefly in Michigan and Wisconsin, leading to the conclusion that the limited areas covered were formerly under cultivation. They are generally in the form of low, parallel ridges, as if made in planting corn with drills. They average about four feet in width, and the depth between them is some six or eight inches. Those of Michigan are mainly distinguished from the large supposed cornfields further east by their symmetrical arrangement and accuracy of outline, forms possibly due to difference in the natural surface of the ground. No relics have been found in them, nor anything to show a connection between the two types. In several parts of New York large corn hills remained until a recent date, and these have been described by Schoolcraft, Clark, and other authors. They were much larger than those made by the whites, a low mound being raised of sufficient extent to contain several hills, and this was used for many years. These low mounds were arranged in rows, and extended over larger areas than the garden beds. We have alluded to these agricultural indications because they are usually included among the important antiquities of the country, yet it is very doubtful whether they are pre-Columbian. However, they are simple and bear only upon the question of sedentary life and agricultural pursuits.

In addition to the ditches which often line the walls of enclosures, a few instances occur where, instead of a

surrounding wall there is a surrounding ditch. An example of this kind is found in the celebrated Etowah group, and some two or three other groups in Georgia. The Etowah ditch starting from the bank of the nearby stream and running around the group in a semicircular form strikes the stream below. The length of the ditch is one thousand and sixty yards; the width varying from fourteen to ninety feet, and the depth from a few to fourteen feet. Canals of considerable extent, which are considered prehistoric are found at several points. However, some that are considered as artificial are most likely natural channels.

## CHAPTER XX

### *THE ANTIQUITY AND AUTHORS OF THE MOUNDS*

BEFORE entering upon a discussion of the questions indicated in the title of this chapter it will not be amiss to refer briefly to the opinions which have prevailed in the past in regard to these questions.

It was not until near the close of the eighteenth century that scholars of the eastern States awakened to the fact that remarkable antiquities existed in our country. It was about this time that President Stiles, of New Haven, Dr. Franklin, Dr. Barton, and a few other leading minds of that day, becoming convinced of the existence of these antiquities, began to advance theories as to their origin. Dr. Franklin, in answer to the inquiry of President Stiles, suggested that the works of Ohio might have been constructed by De Soto in his wanderings. This suggestion was followed up by Noah Webster with an attempt to sustain it; however, this lexicographer subsequently abandoned this position and attributed the works to the Indians. Captain Hart in reply to Dr. Barton expressed the opinion that the works could not have been constructed by De Soto and his army, but belonged to pre-Columbian times, though they were not built by Indians, but by a people in a not altogether uncultivated state.

About the beginning of the nineteenth century Bishop Madison, of Virginia, and the Rev. Thaddeus M. Harris, of Massachusetts, entered into the discussion of this subject—"who uniting," as Dr. Haven has observed, "opportunities

of personal observation to the advantage of scientific culture, imparted to the public their impressions of western antiquities. They represent the two classes of observers whose opposite views still [at the date he was writing] divide the sentiment of the country." One class followed Dr. Harris in the belief that the antiquities were due to a more advanced people than the natives of the section; the other followed Bishop Madison in holding the opposite opinion. Among the more recent advocates of the former view may be classed Squier and Davis in their *Ancient Monuments of the Mississippi Valley*, though Squier subsequently changed his view so far as it related to the antiquities of New York, which he attributed to the Iroquois. Others belonging to this class were John T. Short, author of *North Americans of Antiquity;* Dr. Dawson, in *Fossil Man;* the Rev. J. P. McLean, in *Mound Builders;* and Dr. Joseph Jones, in *Antiquities of Tennessee*. Wilson, in his *Prehistoric Man*, concludes the mound builders were Aztecs; while a number of other writers designated the authors of these works a "lost race," or simply "mound builders," without reference to racial connection. Baldwin (*Ancient America*) expressed the opinion that they were Toltecs; Bradford (*American Antiquities*) suggested Mexico as their original home; while Lewis H. Morgan brought them from the Pueblo tribes; and Dr. Foster (*Prehistoric Races*) agreed with Baldwin.

Among those who inclined to the belief of the Indian origin of these works were Dr. McCulloh, Samuel G. Drake, Henry Schoolcraft, Dr. Haven and Sir John Lubbock (Lord Averbury). Among the recent advocates of this view are Judge C. C. Baldwin, who expresses the opinion that they were village Indians; Colonel F. M. Force (*The Mound Builders*); Dr. D. G. Brinton, who brings forward considerable evidence in the *American Antiquarian* (October, 1881) tending to the conclusion that the Indians were the authors of these ancient works; and Dr. P. R. Hoy, who in a paper entitled "Who Built the Mounds" (1881), presents a number of facts to sustain the same

view. Lucien Carr, in *The Mounds of the Mississippi Valley Historically Considered*, presented historical evidence to show not only that the Indians east of the Mississippi were sedentary and agricultural at the coming of the whites, but also that several tribes were mound builders. But to Major J. W. Powell and Dr. Cyrus Thomas is due the gathering and presenting of the data which seem to have satisfied students generally that the works are attributable to the Indians of the section. It is chiefly from this evidence that the statements upon the subject which follow have been culled.

The authors accept as correct the position on this subject defined in the *Twelfth Annual Report of the Bureau of American Ethnology*, which may be expressed as follows: That the Indians, in the limited sense of the natives inhabiting the Atlantic section, at the discovery, and their ancestors, were the authors of the ancient remains of that section. This limitation excludes from consideration the cultured tribes of Mexico and Central America, and also the Pueblo Indians of New Mexico and Arizona. There may have been some intercourse between the tribes of the mound area and the people of Mexico and the Pueblo section; but the theory here maintained, while not excluding the idea of such intercourse does exclude the supposition that the ancient works of the mound area are due in whole or in part to the more cultured people of Mexico or the Pueblo region; or to any other people than the Indians in the limited sense stated. Some tribes may have become extinct and some merged into others in the past, but this in no way affects the general proposition.

The fact which lies at the base of the theory here maintained, that the Indians were the authors of the ancient works of the Atlantic section, is that they were in possession of this entire region at the first appearance of Europeans; that they were the only occupants, and, so far as known, unless evidence to the contrary be drawn from the mounds themselves, were the only people who had occupied the section. It is true, as has been stated, that the theory

was advanced, and for a time prevailed quite generally, that the Indians were preceded by a more highly cultured people, who were the authors of the ancient works. However, this theory was based upon an incorrect idea of Indian habits and customs, and the supposed indications of higher culture shown by these works. Nevertheless, the Indians being in possession of the section at the time of discovery, and being the only occupants, the reasonable presumption is that they had maintained possession from the time they entered it; but this does not preclude the supposition that they had displaced a preceding race, though the burden of proof falls on those advocating this theory.

There is, however, another phase of the subject which must be taken into consideration before this *a priori* reasoning can be accepted as conclusive. The numerous fortifications and other remains intended as means of defence found in various portions of the mound area are proof of warfare. This fact has been used by the advocates of a preceding cultured race as evidence that this cultured people had been attacked and overcome by the incoming Indian hordes and annihilated or driven southward to become, or be merged into, the civilized tribes of Mexico and Central America. This theory, however, appears to be disproved by two well-established facts. It is known that until a comparatively recent date the various Indian tribes have been almost constantly at war with one another from the time they first became known to the whites. It may, in truth, be stated that here, as among savages of other countries, intertribal war was generally the normal condition of the native population. The second fact is that mound building was still practised and the mounds were still used to some extent at the arrival of the whites. Now it is apparent if the mounds were built by a race destroyed or displaced by the Indians when they entered the section, all of them must be quite ancient, and none of a comparatively recent prehistoric date.

That the entry of the Indians into the Atlantic section, though probably subsequent to their appearance in the Pacific

section, could not have been at a very recent date is inferred from two or three considerations which should not be overlooked in the discussion of this point. One of these is the difference between the characteristics of the ancient remains and peoples of the Atlantic and Pacific sections already referred to. This difference, which pertains to the archæologic, linguistic, and ethnic types, is too well marked to be overlooked. This difference, which has been recognized and made the basis in grouping by other writers, tends to the conclusion that the two groups were developed separately, or diverged at a very distant date in prehistoric times.

Another item along the same line is the distribution of stocks and tribes in the Atlantic section, which, if development of these various groups took place after entry into their respective districts, must have required a period of considerable length, running into several, perhaps many centuries. However, this topic will be discussed in the following chapter. We therefore enter the discussion of the question before us with at least a presumption in favor of the view that these ancient works were built by the Indians. This is of itself one important step in the attempt to solve the problem, as it renders every fact ascertained by the exploration of these works which indicates a similarity between the mound builders and Indians in customs, arts, and mode of life an argument in favor of the theory of an Indian origin, unless overcome by the discovery of equally numerous dissimilarities and facts inconsistent with Indian customs and mode of life.

Thomas claims that even should a few specimens of art of undoubted ante-Columbian origin be found in the mounds, which specimens are in their character and finish evidently beyond the capacity of any of the tribes known to have inhabited this section, this will not be sufficient to establish the theory that these works, or any of them, were built by a "lost race," or by the cultured tribes of Central America or Mexico, as they may have been obtained by intercourse with people of more advanced culture than

themselves, or may be waifs brought by winds and waves, in wrecked vessels or otherwise, from the Old World or the isles of the sea. The great mass of legitimate evidence, and not the few anomalous finds, must govern in such cases. Articles of undoubted European manufacture, where not of intrusive burial, are evidence that the mounds were built after the coming of the whites.

One reason why the Indian was so persistently, so unceremoniously, and so long refused admission as a possible factor in this problem was because of the opinion, which was almost universally held, that when first encountered by European explorers he was a restless, roving, unsettled, unhoused, and unagricultural savage wherever found. As it is conceded that the mound builders, judging by the extent and magnitude of their works, must have been substantially a sedentary people, having fixed villages and depending very largely for subsistence upon the products of the soil, it was assumed as a necessary inference that they could not have been Indians, as these were to a large extent nomads, depending for subsistence almost wholly upon the chase. Although this idea had been advanced before his day, yet Gallatin may be considered the father of the theory, as it is apparent that Squier and Davis took the writings of this author on this subject as their chief guide.

Why the general public should gain the impression that the Indians when first discovered were wanderers, spurning the restraints of sedentary life and scorning the labor of cultivating the soil, is easily understood from their character after they had been driven from their original seats by the colonists. But why writers who had access to and were familiar with the early history of the section should entertain this idea is strange when it is evident from the early records that the tribes from the Mississippi to the Atlantic were substantially sedentary, having their fixed seats and relying to a considerable extent upon the cultivation of the soil for subsistence. It is true that they were often engaged in warfare, and devoted a portion of the year to hunting

excursions and raiding expeditions, but they retained their fixed habitats. When De Soto passed through the Gulf States to western Arkansas in 1540–1542, he found the inhabitants sedentary, residing in villages and cultivating the soil for subsistence. It was upon the maize and other cultivated products taken from the inhabitants that he depended for subsistence for his army and the numerous captives carried with him as burden bearers.

It was chiefly upon the maize fields of the natives that the European colonists along the Atlantic coast depended, during the first two or three years of their existence, for food. When Jacques Cartier visited Hochelaga, now Montreal, Canada, in 1535, he beheld around the village large fields of corn, which, as he informs us, when ripened and gathered, the inhabitants preserved "in garrets at the tops of their houses." When Marquette and La Salle passed down the Mississippi, they found the inhabitants along this stream cultivating maize, melons, and other plants, which were their chief reliance for food. Du Pratz says: "All the nations I have known, and who inhabit from the sea as far as the Illinois and even further, which is a space of about fifteen hundred miles, carefully cultivate the maize corn, which they make their principal subsistence." It is said that Denonville in 1687 destroyed more than a million bushels of corn in the fields of the Iroquois, in New York. But it is unnecessary to give other data to prove that the Indians of this section were cultivators of the soil. Had it not been for the corn furnished the Pilgrim settlement in its early days by the Indians, willingly or through force, there would be few, if any, descendants of the Pilgrim Fathers to write their history or sing their praise. If cultivators of the soil, they were, of course, substantially sedentary; hence, the objection to their being mound builders because they were nomadic hunters vanishes.

Repeated instances of indications of European contact found in mounds in conditions which forbid the supposition of intrusive burial, are conclusive evidence that the mounds

in which they are found are post-Columbian. Mention has been made of hawk's-bells found in a Tennessee and a Georgia mound; and it is also true that iron implements or parts of implements have been found in several mounds where the idea of intrusion is forbidden, as in Georgia, North Carolina, Tennessee, and Ohio.

Similarities in the customs of the mound builders and the Indians furnish another link in the evidence of the identity of the two peoples. It was a custom of the mound builders in certain localities, as has been noticed in a previous chapter to remove the flesh of the dead before final burial. A similar custom, as is well known, prevailed among a number of Indian tribes; in fact, one or two early writers speak of persons whose business it was to remove the flesh from the dead before burial. In some instances the bodies were deposited for a time in houses devoted to this use; in others they were placed on scaffolds or in trees; and in other cases there was a temporary burial in graves. Burial in a sitting posture was practised to some extent by both mound builders and Indians; and both peoples made use of fire at times in burial ceremonies. Shell gorgets with figures engraved thereon and, with few exceptions, all kinds of ornaments and implements found in the mounds were in use among the Indians of the Atlantic section at the first appearance of the whites.

One of the most important items of evidence in this connection is drawn from the stone sepulchres or box-shaped stone graves. These have been described and facts stated showing that this mode of burial was in vogue among certain tribes up to and even for some time after the advent of the whites. This evidence is so clear as to leave no reasonable doubt that some of the Delaware Indians, both on Delaware River and after removal to Ohio, buried to some extent in graves of this type. The evidence also indicates that the Shawnees usually buried in graves of this kind until they settled in the Scioto valley, Ohio, about 1750. Not only so, but they very often placed

these sepulchres in mounds, thus proving that they were mound builders.

There is, however, direct historical evidence that the Indians of the southern States were still building and using mounds when white explorers began to penetrate into the interior of the section. As the references on this point are too numerous to be given in detail in the language of the early authorities, a brief notice of the leading items must suffice. The most important items on this subject are found in the several chronicles of De Soto's wild and disastrous expedition through the southern States. Biedma, one of the most reliable of these chroniclers and an eye-witness of what he describes, says: "The caciques of this country make a custom of raising very near their dwellings very high hills on which they sometimes build their houses. On one of these we planted the cross." At the landing point in Florida, mounds in use by the Indians were observed by the explorers; and an excavation of the tumuli at this point has apparently confirmed the statement of the chronicler, as in the upper strata articles of European manufacture were found, while in the lower strata no indication of contact with the whites was observed.

Garcilasso says the Indians try to place their villages on elevated sites, but, inasmuch as in Florida there are not many sites of this kind, they erect elevations for this purpose, on some of which fifteen or twenty houses can be placed for the use of the cacique and his attendants. For the purpose of ascent, they make a passageway—graded way—fifteen to twenty feet wide. He adds the significant statement that: "Here [in the graded way] steps are made of massive beams." Not very many years ago, the marks of beams of this kind were very distinctly visible in the graded way of the Etowah mound, Bartow County, Georgia, which was visited by De Soto.

Herrera's account of De Soto's wanderings is chiefly taken from Garcilasso's work; however, as it is known that he consulted manuscripts now lost or not obtainable, we note

the following statements (vol. iv, dec. vii): "Some made their escape to the Lord's house, which stood on a ridge [mound] to which there was no way up but by stairs. . . . Having entered the province Amilco, they traveled thirty leagues through it to a town of 400 houses, and a large square, where the Cacique's house stood upon a mound made by art on the bank of a river." The house of the cacique of Guachacoya, in Arkansas, was also on a mound. It was from the top of a mound, also in Arkansas, where he had been sleeping in the chief's house, that De Soto, as heretofore stated, administered a severe rebuke to one of his officers for insubordination.

As allusion is made in these notices, and others might be added, to mounds in Florida, Georgia, Alabama, Mississippi, and Arkansas, it is apparent that the custom of building and using mounds prevailed throughout the Gulf States in 1540; nor had it ceased one hundred and thirty years later, when the French descended the Mississippi and took possession of this southern region. Nor do these writers refer to mounds only, as they describe fortifications which surrounded native villages, both walls and moats, which, under the corroding effects of time and the elements, would leave precisely such works as are now found in several places in that section.

As the more important ancient works of the southern section are attributable by this historical evidence to the Indians, it is a reasonable assumption that all the monuments of that section are attributable to the same people, unless evidence be found in them of a different culture. If the Indians of the southern districts were the builders of the mounds of that region, which include some of the most important ancient works, there is no good reason so far presented why we should not attribute the works of the northern districts to Indians.

The traditions of the Delawares, Cherokees, and some other tribes, mentioned in the following chapter point back to a date preceding the discovery by two or three centuries,

during which mound building must have been in vogue, but this cannot be accepted as a sufficient lapse of time to cover all the indications found in the ancient monuments and other data bearing upon the question of the duration of the mound building era. It is true that Nadaillac says: "That from the mounds themselves we can learn nothing [as to their age]. A lapse of thirty centuries or of five would account equally well for the development of the civilization they represent." But this is an assertion with which we cannot entirely agree. It is true that we cannot fix, even with approximate certainty, the date at which mound building commenced in this section. That we may have to go back a thousand years preceding the discovery by Columbus is not improbable, yet there are some facts which justify the inference that neither in the Atlantic section nor in Central America are there any data pointing to a hoary antiquity like that of the pyramids and tombs of Egypt or the temple ruins in Assyria.

As has been shown, the evidence that mound building continued into post-Columbian times is indisputable. It is also clear that there are no indications of a break or of an era of discontinuance in the custom after it had commenced until its ending subsequent to the appearance of the whites. The mound building age must, therefore, be considered one and unbroken. Single tribes may have changed their custom with change of habitat, nevertheless it is evident the custom was continued, in the general sense, after it had commenced.

It is probable that, excepting possibly some of the simple burial mounds, the most ancient types are represented by some of the more elaborate works, larger pyramids and effigy mounds; at least, this seems to be the general impression among archæologists. Be this as it may, one certain sign of long-continued occupancy is wanting in every part of the section. This is the absence from the mounds of indications of successive waves of population, and of changes in culture, the absence of varying strata telling, by the

mute witnesses imbedded therein, of passing ages and alternate times of building up and destroying. These signs are wholly wanting in every part of the mound area; at least they are limited to the evidence in a few instances of subsequent temporary occupancy of some two or three groups of works. It was thought that an exploration of the caves might bring to light evidence of more ancient occupancy. Although not so complete as it should be, this has been done to a considerable extent, but the evidence so far obtained is entirely negative; nothing going back of the Indian as we know him has been discovered, nor any indications of a different culture. If mound building had been carried on for thousands of years, the favorite localities of the ancient inhabitants of the section would show different horizons of ancient remains, and the depth of the accumulation would be much greater than it is found to be.

There are a few mounds which furnish evidence of having been built up by successive additions at different dates; some that show two or more series of burials with greater or less intervals; and others which present evidence of successive occupancy after intervening periods of rest; nevertheless, we find throughout evidences of the same culture, of similar customs, and indications of the same racial traits. There is nothing authentic found anywhere that points to the presence of a people of more advanced culture than the Indian, of a people who had passed out of and beyond the stone age. Even the evidence furnished by the shell mounds and kitchen middens is substantially the same in this respect as that furnished by the mounds, there is nothing presented by them showing a more primitive or more advanced stage of culture than the works of the Indian natives. There are no evidences of greater changes than would result from the outgoing of one stock and the incoming of another. The ruins of a single dressed stone building have not been discovered in the entire section, nor any indication of the smelting of copper or the manufacture of iron.

Having reached the conclusion that the mounds and other ancient works of the section were built by the Indians, the discussion of the beginning and duration of the mound building must be consistent therewith. This necessitates the further conclusion that no tribe would become mound builders until it became at least semi-sedentary and had a fixed and determinate habitat and relied, to a considerable degree, upon the cultivation of the soil.

Nadaillac, as quoted above, thinks that from the mounds themselves we can learn nothing as to their age. This, however, is not strictly correct. While it is true that some of them reveal evidence of being post-Columbian, yet the contents of others and the trees which were found standing on them tell as plainly that they are pre-Columbian, or, in other words, that they are prehistoric. That no "thirty centuries" have passed since they were erected is evident to anyone who will examine them and test their condition by exploration. Let him compare the slight depth of but a foot or two, or four to five at the most, that he has to sink his pit to pass through the subsequent surface accumulation, with the depth, often ten, twenty, or more times as great, necessary to uncover the ancient remains of Egypt, Assyria, Crete, and other points in the Old World. In other words, there is nothing in the archæology of the mound area to indicate any such antiquity as that of most of the Old World sites. So far as the general purport of the monumental evidence of this section can be gathered, it is decidedly in the direction that sedentary life here began long after nations had risen, lived, and fallen in the historic regions of the eastern continent.

It is probable that Force was not far wrong in "fixing on the seventh century as the most flourishing period" of the mound builders; nor Hellwald, in "making them contemporary with Charlemagne." Thomas concludes from the data he gathered on the subject that one thousand years preceding the coming of Europeans would suffice for the beginning and development of the mound building custom and for the

construction of all the known works, though admitting that the period might have been longer. However, the data bearing directly upon the subject are comparatively meagre and indecisive except as to certain limitations.

Moorehead's estimate of the age of Fort Ancient, heretofore mentioned, is not extravagant; yet an examination of the fortification has impressed others, equally qualified to judge, that a shorter period would be more consistent with its appearance. The surface accumulation on the wall is but slight, whereas the decay of vegetation for a thousand years would have given a deeper covering and rounded out the sharper outlines. In fact, it is thought by some students that the work, instead of being one of the earliest, is one of the later constructions of the Ohio mound builders.

It is probable that the Cahokia group in the bottom lands on the Illinois side of the Mississippi, opposite St. Louis, is one of the early class, though the outlines have been so long disturbed by the plow that it is impossible to judge of the age at the present day by the appearance. Even the great mound has been so worked over during the occupancy by the La Trappe monks and subsequently and so scarred by the elements that the accumulated surface soil has long since been worn away. Its antiquity is inferred in part by the entire lack of tradition in regard to the group; this, we know, is generally true of mounds, but the fact that the group is a large one, and the unusually large size of the chief tumulus, and the situation near the banks of the Mississippi, where there was constant travel, would, as it seems, have caused notice of it to be preserved in tradition had it been occupied in late prehistoric times. Mention is made by French missionaries of the Indians of that section as early as 1700; a missionary was stationed with the Cahokias at that time, whose duty it was to visit alternately this tribe and the Tamaroas; and although French missionaries make mention of mounds further south, no mention is made of this group. It is evident, therefore, that it was unoccupied at that time, and probably covered with a heavy growth



Travois, as used by Indians of the present day; at the period of the discovery, dogs were used in place of the horse.

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of timber; otherwise, the opening in the forest would have brought it prominently into notice, and mention would have been made of it.

It is presumed from these items, which it is admitted form a slender basis for a conclusion, that these mounds date from a quite distant period. That they were not built by the Cahokias or the Tamaroas, or by any of the Illinois tribes, may be assumed, as their presence in that immediate section was of comparatively recent date, nor is it known that any tribes of this group were mound builders to any considerable extent. We might suppose that the Quapaws, who were great mound builders, made a long halt at this point on their way south, or that the Chickasaws or some other Muskhogeans were the authors. However, it is useless to speculate, notwithstanding the great temptation in this instance, as all that can be said until the mounds of the group have been thoroughly explored is purely guesswork.

We conclude that the evidence compels the admission that the mounds of the Atlantic section were built by the Indians found occupying it at the discovery or by their ancestors. We believe also that the evidence justifies the conclusion that the mound building era was continuous and probably reached back one thousand years, or possibly longer, before the landing of Columbus.

# CHAPTER XXI

## *DEVELOPMENT, MIGRATIONS, AND ADJUSTMENT*

A STUDY of the linguistic map of this section showing the distribution and habitats of the various stocks at the time they first became known to the whites, and an examination of the lists of tribes composing these stocks or families, are sufficient to make it evident that the differentiation, at least of the minor divisions, must have taken place after the family groups had entered the region of the continent where they were found by the first white explorers. Had the division into tribes—whatever may have been the process by which it was accomplished—happened before they had entered the district, there is no likelihood that their seats would have been in such absolute contact that the entire group would cover one continuous area. Some one or more of the tribes would have lagged behind, dropped out by the way, attracted by some favorable region, or have pushed on beyond the remaining portion. The following remarks, by Major J. W. Powell, regarding his linguistic map in the *Seventh Annual Report of the Bureau of American Ethnology*, lead to the same conclusion:

> In the first place, the linguistic map, based as it is upon the earliest evidence obtainable, itself offers conclusive proof, not only that the Indian tribes were in the main sedentary at the time history first records their position, but that they had been sedentary for a very long period. In order that this may be made plain, it should be clearly understood, as stated above, that each of the colors or patterns upon the map indicates a distinct linguistic family. It will be noticed that the color,

representing the several families are usually in single bodies, *i. e.*, that they represent continuous areas, and that with some exceptions the same color is not scattered here and there over the map in small spots. Yet precisely this last state of things is what would be expected had the tribes representing the families been nomadic to a marked degree. If nomadic tribes occupied North America, instead of spreading out each from a common center, as the colors show that the tribes composing the several families actually did, they would have been dispersed here and there over the whole face of the country. That they are not so dispersed is considered proof that in the main they were sedentary.

Having accepted the theory that the people of the American continent were immigrants from the eastern continent or some other part of the world, and not autochthones, it follows that the occupants of the Atlantic section, or at least their ancestors, came thither from some other point or points, and spread over the section as the result of further immigration, or of growth and increase. It is also evident, whether we adopt the theory of glacial man or not, that we must admit that the distribution and the geographical relations and conditions shown by the map were the result of postglacial development. Were the stock germs—or, we may say stock language, for it is almost wholly by language that stocks are now recognized,—already formed when the original immigrants entered the mound region? Such seems to have been the opinion of Major Powell if we may judge by the following statement:

> It is believed that the families of languages represented upon the map can not have sprung from a common source; they are as distinct from one another in their vocabularies and apparently in their origin as from the Aryan or the Scythian families.

The Algonquian family, which spreads over a larger area than any other family in the Atlantic section, extending from the Rocky Mountains to the Atlantic, and from Labrador to Tennessee, has but a single segregated offshoot, and the separation in that case is known to have been of comparatively recent date. This continuity would not be found if the tribal divisions had been formed before entering the section; and it may be added here that entry

into this section, if not an original landing on the northeast coast of the continent, must have been from the northwest or from the south.

The entry of population into this district is limited to three directions: from the northwest, the south, or the east. If from the east, it must have been an original entry from the eastern continent; if from the south, it must have been from or by way of the West Indies, or along the Gulf coast from Mexico. That it could not have been from the Pacific coast across the plains has been made apparent from an examination of the movements of population on the Pacific slope; but the pathway was clear from the northwest. Our reference here is to the postglacial period, as the changes, development, and adjustment which resulted in the conditions found existing when the whites appeared must have taken place subsequent to the last glacial epoch. It is even a question, according to a recent author, who is a strong advocate of glacial man, whether the Indians are the descendants of the early race. "Whether the Indians are descended from this ancient population or not," says Fiske, in his *Discovery of America*, "is a question with which we have as yet no satisfactory method of dealing. It is not unlikely that these glacial men may have perished from off the face of the earth, having been crushed and supplanted by stronger races. There may have been several successive waves of migration, of which the Indians were the latest." The subject, therefore, of the entry of population into this eastern section must be treated without regard to the theory of glacial man.

Although there have been some advocates of migration from South America by way of the West Indies to the region now embraced in the Southern States, the theory appears to be based on exceedingly slender data. Brinton and one or two other authors were inclined for a time to consider the Apalaches of western Florida as related to a South American stock, but this theory was abandoned when Dr. Gatschet made it clear, by a study of their language,

that they pertained to the great Muskhogean family. Certain types of artefacts from the mounds and graves of Florida, especially of pottery vessels, have been supposed to present evidence of Caribbean or other southern influence; but this is to no greater extent than the indications of the designs on shells and copper found in mounds further north, and cannot be considered as indicating anything more than accidental contact.

The most extravagant theory on this subject is that advanced by so careful a writer as Payne, who in touching this question seems to have lost his balance. He says that recent investigations indicate that the maritime movements of the Caribs did not end in carrying maize and manioc over the West Indies. That "traces of the Caribs are found on many shores of the Caribbean Sea and Mexican Gulf. The Indians of Florida at the Discovery seem to have been of Carib origin; and our comparative examination of languages suggests that this people even ascended the Mississippi, struck into the center of the North American continent, and were perhaps the original founders of the long vanished culture of the mound-builders."—(*Hist. Am.*, i, 433.)

The theory of movements of population in each of the two remaining directions, from the east toward the west, and from the northwest toward the east and southeast, have had and still have their advocates, though the old favorite theory of movement from the northwest still counts the larger number of adherents, because of the prevalence of belief that original entry was at the extreme northwest of the continent. The advocates of movement from the east toward the west must assume that there was a nucleus from which the tribes referred to were developed, whether by descent or combination; and this nucleus must have come to the east from some other locality, either exterior to or within the limits of the continent. In other words, every theory of chief primary movements, except that of glacial or preglacial man, must have behind it a supposed line or direction of original entry.

Accepting Major Powell's linguistic map as the best available representation of the geographical extent and positions of the several linguistic stocks at the advent of the whites, the next important problem is the order of entry, and the steps of adjustment. The respective positions of the stocks, as shown on the map, would tell us much if the direction of entry were known. If the primary movement was from the north, the natural conclusion would be that those groups along the Gulf coast, as the Muskhogean and the Timuquanan, were in advance. However, this general rule is subject to exceptions, but the exceptions to be admitted must be pointed out.

When European colonies began to be established along the Atlantic coasts, and firearms were placed in the hands of the Indians, and the Iroquois began to war upon other tribes with these deadly weapons, the effect was felt immediately by the entire Indian population north of the Ohio and westward to the great plains. The tribes nearest the danger circle were pressed back upon those behind them, and these, in turn, upon those still back of them, and so on to the limits of the outer circle. The movement westward became general, pushing even the Crees at the northwest limit against the advanced tribes of the Athapascan stock; and driving the Siouan tribes, by means of the guns in the hands of the Chippewas, from the headwaters of the Mississippi out upon the plains. The time, however, of which we speak and the movements to which we refer lie back in the more distant past and have no connection with these later westward movements, which have too often been taken as indicative of the former. The reference in Indian traditions to a "great water" has almost invariably been taken, when relating to tribes in the Atlantic section, as indicating the ocean, when, if in the north, Hudson Bay was probably intended. A case in point is the interpretation by Warren, in his *History of the Ojibways* [Chippewas], of the tradition of this tribe that they formerly lived on the shore of a salt sea, which seems beyond any reasonable doubt to be

Hudson Bay. This author contends that it refers to the Atlantic Ocean, and proceeds to give step by step the route they followed up the chain of the great lakes, noting each point at which they paused for a time. The details are most likely modern additions, as there is nothing whatever to corroborate them. On the other hand, there are several significant items which are wholly inconsistent with this rendering of the tradition, but are consistent with the idea that the sea referred to was Hudson Bay, as will be noted on a subsequent page.

Although it is not possible for us to trace out one by one the movements of the various stocks and tribes, and all the steps of adjustment by which they reached and settled in the several areas which formed their habitats at the coming of the whites, yet tradition and language throw light on the early movements of some of them. There is one tradition of the northern central region, recognized by writers holding various theories as to primary movements as one of the most authentic of Indian traditions, which having been preserved in symbolic characters has undergone but little change in transmission. One writer has even asserted that it may well-nigh be considered history. This is the Delaware, or Lenni-Lenape, tradition of the migration of their tribe from some northern region to their historic seat in the Delaware valley.

The tradition, as given by Heckewelder, is in part as follows:

> The Lenni Lenape (or Delawares) many hundred years ago (before his time) resided in a far distant western country. Concluding to migrate eastward they arrived at the Namaesi Sipu ("Fish river") where they met with the Mengwe (Talamatans or Iroquois) who had also emigrated from a distant country. They crossed the river but were opposed in their journey by the Talligewi or Talega (the Cherokees). The Talega were conquered and driven south.

Heckewelder, having concluded that the Delawares started from some point west of the Mississippi, supposed this river to be meant by Namaesi Sipu. He adds, besides what has

been quoted, a number of items, of which it is necessary for us to note only the following:

"For a long period of time—some say many hundred years—the two nations [the Lenape and Mengwe] resided peaceably in this [the Talega] country and increased very fast." Having passed on eastward to the coast, "At last they settled on the four great rivers (which we call Delaware, Hudson, Susquehannah, Potomack), making the Delaware . . . the center of their possessions. They say, however, that the whole of their nation did not reach this [their eastern] country; that many remained behind, in order to aid and assist that great body of their people which had not crossed the Namaesi Sipu."

Only such parts of Dr. Brinton's summary and version of this tradition, as given in the Bark Record, or Walam-Olum, in his *Lenni Lenape and their Legends* as are necessary to our present purpose can be referred to here.

That the country from which the Lenape took their departure was the cold region north of the lakes and not to the west of the Mississippi, as Heckewelder supposed, was first shown by Dr. Hale and is now universally admitted; moreover, this is evident from the language of the tradition as given in Brinton's translation:

III. 2.—It freezes where they abode, it snows where they abode, it storms where they abode, it is cold where they abode.
7.—In that ancient country, in that northern country, etc.
11.—Those from the north being free, without care, went forth from the land of snow.
13.—Floating up the streams in their canoes, etc.
14.—Head Beaver and Big Bird said,
'Let us go to Snake Island,' they said.
16.—Those of the north agreed
Those of the east agreed
Over the water, the frozen sea
They went to enjoy it.

There can be no question, therefore, that their ancient country was in the region north of the lakes, and the

statement that in their progress southward they moved up stream in their canoes, is difficult to explain on any other theory than that they passed up the streams which flow northward into Hudson Bay.

As they passed to the region south of the lakes they must necessarily have crossed some one of the links connecting the chain of great lakes. Dr. Horatio Hale, speaking of the great river they crossed, says: "The great river was apparently the upper St. Lawrence, and most probably that portion of it which flows from Lake Huron to Lake Erie, and which is commonly known as the Detroit river." It is directly after crossing this river, as he thinks, that they encountered the Talega, but an examination of the tradition as given in the Walam-Olum, shows that they had been south of the lakes many years before they came to the stream beyond which lay the towns of the Talega.

> Over the water, the frozen sea
> They went to enjoy it [Snake Island]
> On the wonderful, slippery water [ice]
> On the stone-hard water all went.

It was this crossing of some body of water at a season when it was covered with ice that brought them to the southern side. Thomas in the *American Antiquarian* and in his *Study of North American Archæology*, suggests that this crossing was in the region of Michilimackinac into the southern Michigan peninsula. Without accepting or rejecting this suggestion we notice one or two items resulting as he thinks therefrom. "Here, after a long halt they divided, a part, probably the Shawnees, going south; another, possibly the Miamis, remaining in southern Michigan."

IV. 49.—They separated at Fish river; the lazy ones remained there.

But before they reached this (Fish) river they had wandered down the peninsula, had come into possession of maize, and had moved westward to the border of the

prairie country, as far, according to Brinton's suggestion, as northwestern Indiana.

IV. 25.—After him, Corn-breaker was chief who brought about the planting of corn.

A dry season had withered their crops, and now they turn their faces eastward.

IV. 28.—There was no rain, and no corn, so they moved further eastward.

At length they reach Fish River (probably the Maumee), where the "lazy ones" (probably the Miamis) desert them. They cross over, wage war with the Talega and after having driven them southward, make their way over the Alleghany Mountains, and thence to the coast.

That this was not a movement in the nature of an expedition, or a continuous journey, is evident. It was a slow movement with repeated and long stops. They appear to have fought their way step by step, now battling with the Snake people, then with the Northerners, the Tawa (probably the Ottawa), and, finally, before they began their last march, with the Talega or Cherokees. There are no data by which to identify the Snake people, or those spoken of in the tradition as Northerners. However, accepting the tradition, after excluding the manifestly mythological portion, as having a basis of fact, and as outlining a real migratory movement, several important inferences may be drawn in regard to the condition and relation of the tribes in the northern portion of the Atlantic section at an early date in the prehistoric past. It is, in fact, the earliest glimpse we obtain of the people of this section, save that of the Eskimo, and possibly the Beothuks or Micmacs, through the Northmen in the eleventh century, and possibly even antedates the arrival of those adventurous Icelanders.

The first important fact we gather from it is that other tribes had preceded the Delawares into the region south of the lakes; nor is it material, in our attempt to draw

deductions, whether Hale be correct in his supposition that the crossing was at Detroit River, or Thomas, that it was at the Strait of Michilimackinac, as in either case they entered the southern Michigan peninsula. The first people they encountered, and with whom they had a long contest, were those of Snake land: the *Akowini*, or "Snake people." It is probable these were located at that time in southern Michigan or northern Indiana. Who they were is not known. The Tawa, with whom the Delawares also came into conflict while west, and possibly in the Michigan peninsula, are generally supposed, and no doubt correctly, to have been the Ottawas. However, the home of the latter must have been north of the lakes then, as there is no evidence that they lived south of them at that early date.

Another people spoken of with whom they came in contact are simply designated by the name *Lowanuski*, "Northerners" or "northern foes." This must also have occurred while the Delawares were in southern Michigan or in the region of northern Indiana, though there are no data by which to identify them. However, we gather the important fact from these notices that points along or in the vicinity of the route which the Delawares travelled were already occupied by tribes which had entered the area south of the lakes. Although not identifiable at present, there is little doubt that, with the exception of one or two, as the Assinapi, which may have long been extinct, they are historic tribes known subsequently by other names.

These migratory movements and repeated conflicts form part of the process of what we have called adjustment—that is, coming into more permanent territorial relations; for it is more than probable that if we had as complete traditions of other tribes, we should find the experience of the Delawares repeated, though possibly less extended. We must bear in mind the probability that the zigzag movements of this tribe were due not so much to the whim of their leaders as to the pressure of other tribes. When they were in the region of the Wabash, which, with good reason,

Brinton suggests they reached, they had already learned the value of maize and the method of its cultivation, and were in a rich agricultural country, as was also Ohio, from which they drove the Talega. Why did they leave these favored localities, unless because of pressure by other tribes? It is true it is stated in regard to the former that a dry season had withered their crops and they went seaward. But it is more likely that there was some stronger impelling cause of this movement, and it was doubtless the attacks of their former friends, the Talamatans, which caused them to leave the rich agricultural region of Ohio.

The presence of the Cherokees—the Talega—in what is now Ohio is, so to speak, one of the landmarks in the study of prehistoric times in this northern central district of the mound area. Language has shown the Cherokees to be a division of the Iroquoian stock, a stock whose home has always been in the north, though a few offshoots made their way to more southern regions. They had evidently separated from the parent stock before the arrival of the Delawares and made their way southward into the Ohio valley. How long before the arrival of the Delawares this separation took place we have no means of judging; nevertheless, the Talamatans, who probably represented the main stem from which they started, and who lived at that time immediately north of Lake Erie, willingly made war upon them. It has, however, been characteristic of the Iroquois to make war upon all their kindred who attempted to live as separate organizations.

Accepting this traditional history as substantially correct, which is corroborated by the tradition of the Cherokees that they formerly lived on the upper Ohio, we can follow the latter from their early home north of the lower lakes to their historic seats in the mountains of North Carolina and east Tennessee. Though largely traditional history, it is entirely consistent with all other data, including other traditions which have been obtained, and the mound testimony.

After crossing the range to the east, the Delawares seem to have had but few contests, and these with enemies they

had encountered further west. It is thus the Walam-Olum speaks on this point:

V. 21.—A great land and a wide land was the east land,
22.—A land without snakes [enemies], a rich land, a pleasant land.

This is significant, and if it can be relied upon as substantially correct, indicates that when the Delawares arrived in this eastern section it was comparatively uninhabited, and throws back their arrival here to a somewhat distant date. But let us follow up the tradition and see what inference can be drawn therefrom as to the growth and the disintegration of the group.

Before they had crossed the range, while yet, as it seems, located along Ohio River, offshoots began to seek other homes.

V. 9.—Little Cloud was chief, many departed,
10.—The Nanticokes and the Shawnees going to the south.

However, the Shawnees, though keeping with the group, must have been a distinct tribal organization, as their tradition as given at an early date speaks of a crossing on the ice (Michilimackinac, Thomas; Detroit River, Hale), which, according to this tradition, was brought about by the magic of the Shawnee shamans. This southern locality is consistent with what is known of the subsequent history of the Shawnees; but it is somewhat difficult to trace, even theoretically, the course of the Nanticokes from the upper Ohio to their historic habitat on the eastern shore of Chesapeake Bay. There is a possible clue to the problem if we accept Heckewelder's theory that the Conoy (or Piscataway), of Maryland (relatives of the Nanticokes), were the Kanawhas and formerly lived on the stream of the latter name in West Virginia—a suggestion which we will not attempt to follow up here.

Other dispersions alluded to in this remarkable tradition are those which imply that the Mohegans, and in fact most of the Algonquian tribes of New England, were offshoots

from this group. Heckewelder's version is quite explicit on this point. From "the Unami, Unalachtigo, and the Minsi [the three divisions of the Delawares], had, in the course of time, sprung many others. . . . The Mahicanni, or Mohicans, who spread themselves over all that country which now composes the Eastern States." This is in exact conformity with the view now generally maintained by ethnologists.

The firm belief of the Delawares in the truth of this tradition is proved by the fact that when pushed out of Pennsylvania, and they decided to settle on the Muskingum in Ohio, they based a claim to that section on the plea of former occupancy, and presented it to the Hurons and Miamis then holding the region, who allowed it and permitted them to settle there. They also claimed land on White River, Indiana, and their settlement in that region at the close of the eighteenth century was regarded by them as a return to their ancient seat.

Such is the tradition of the Delawares, and though but a tradition, it is one Indian legend which, perhaps, may be considered history. It is on this account, and because of the light it throws on the process of adjustment and the establishment of geographical relations, that we have devoted so much space to its consideration. We take for granted that the stock groups were to a large extent developed and the tribes differentiated in the areas the stocks were found occupying at the advent of the whites. The movement of the Delawares, though an extensive one, was wholly within the Algonquian area; and that of the Iroquoian element alluded to as the Talamatan seems to have been within the Iroquoian area. The Cherokees alone of the tribes we have identified had wandered beyond the limits of the stock to which they pertain.

Before passing from the northeast, which, as we have seen, was largely peopled by offshoots from the Delawares, attention is called to the more recent conclusion of historians and linguists, mentioned in a preceding chapter, that

the natives encountered by Thorfinn the Norseman, in his attempt to settle in Vinland, were not Eskimo, as was formerly supposed, but Beothuks or Micmacs, probably the latter. If the latter, they pertained to the Algonquian stock, and hence we have evidence that one tribe of this stock had reached the northeast Atlantic coast as early as the eleventh century. If these natives were Beothuks, we still have evidence that others besides the Eskimo had reached the eastern coast by the date mentioned, and it is more than probable that they were followed by others who were pressing them onward to the shore. If the conclusion as to the people encountered be correct, the fact becomes an important chronological landmark, as this date is fixed with a greater degree of certainty than any other reaching back more than one or two centuries in the prehistoric era, and has some bearing on the period of the Delaware migration.

As mentioned in the Delaware tradition, one of their chiefs, apparently while the tribe was in the region of northern Indiana, went south and obtained corn (maize). From whom? Unfortunately, the name is omitted; but further on, where referring to a later date, the legend mentions the Koweta as a people of the south. As the Koweta are the Creeks, it is quite probable that corn, to be used as seed for planting, was obtained from them. The Shawnees had not established themselves on the Cumberland at that early date. It is admitted that other tribes, which have become extinct or had moved elsewhere by the time the whites appeared, might have occupied southern areas at that time, but hypotheses should follow known data as closely as possible. As the Creeks were in the southern district at an early day, and were mound builders at the time of De Soto's passage through their country, and also cultivators of the soil, to whom more likely would the Delaware chieftain have gone for corn? As this supposition places the Creeks in their southern home at an early date, we turn to their national tradition, for they too have one, to see if there is anything

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Prehistoric ruin on top of Cebollita Mesa, New Mexico; the finest ancient ruin, as to workmanship, in the Southwest.

in it at variance therewith. This tradition, which has been gathered by Dr. Gatschet in the native tongue and published in his *Creek Legend*, tells of their progress eastward and of the division and settlement of the several tribes of the Muskhogean group. However, with the exception of what pertains to their tribal affairs and tribal relations, we learn but little relating to their migrations except that they came from some western locality. On this point there appears to be no dissenting opinion; but the tradition gives no intimation as to the locality of the starting point.

How far back in the prehistoric era we must go for the date of this Creek migration it is impossible to decide with any degree of certainty without other data than those at present in our reach. Nevertheless, we can say with reasonable certainty that they and other tribes of the Gulf States had long resided in that section at the coming of the whites. This is proved by the numerous mounds and other ancient works of this region. The comparatively slight changes in the manners, customs and habitats of the tribes from the time De Soto passed through that country until the French appeared upon the scene a century and a half later afford some indication of the time they had been firmly fixed in the habitats they were found occupying. De Soto found the people, even at his day, changed almost entirely from the hunting state to that of agriculturists, relying almost wholly upon the cultivation of the soil for subsistence. So apparent was this fact to this Spanish adventurer that he called the attention of his followers to it. While these are but feeble aids in our attempt to judge of the length of time the Muskhogean tribes had occupied their southern habitats at the coming of the whites, it certainly presents nothing inconsistent with the idea that it was from them that the Delawares first obtained corn, as stated in their tradition. The fact, mentioned in a previous chapter, that the names for maize given by the tribes along the Mississippi, beginning with the Choctaw and going north, indicating one line along which it made its way northward,

also favors the theory that these southern tribes were the first in the mound area to receive it from the more distant south.

The fact that the traditions both of the Delawares and the Creeks start out alike, that is, with the group as a united body, which as it proceeds splits into tribes and sends out offshoots, is consistent with the theory that the development and division of the stocks into tribes took place after entry into the area. The Delaware tradition, if accepted as based on truth, after excluding the mythological portion, throws some light on this process of tribal differentiation, as it appears that this process was going on during the migration as well as after they had become firmly established in their eastern habitat. However, had the tale been told by the eastern Mohegans, the stopping place would have been in New England instead of in New Jersey and eastern Pennsylvania; the latter would have been to them merely a pause in the journey. This will bring before the mind what is perhaps the true idea of these primary migrations, and of development and differentiation as well. It was a slow process, a process that required time. Taking it for granted that the Muskhogean tribes were established in their southern homes while the Delawares were yet west of the mountains, their entry into this southern region must have been at an early date.

If the Delawares originated in the region north of the lakes, this will indicate, though it does not prove positively, that the original home of the stock was in that region or in that direction—a suggestion which is strengthened, however, if other tribes or groups of the same stock are traceable to the same region. The element of time must also be taken into consideration in discussing this point, for the lines of all the divisions of the stock must, if the theory of derivation be correct, meet if carried back to the ultimate point. There may be individual and even clan and tribal adoption, increasing the population of the tribe or group; but the main body will be that derived from the original

stem, and the very fact of reception by adoption is of itself a recognition of an original stem.

According to their traditional history and as proved by other evidence, the Chippewas, who belong to the Algonquian stock, formerly resided north of Lake Superior, near the Crees, with whom they are closely related ethnically and linguistically. As the traditions of both the Ottawas and Potawattomies make them originally one with the Chippewas, they must also have had the same origin.

The result of our examination so far of the movements and adjustment of groups and tribes in the Atlantic section has been as follows. We have found, at the earliest date we could reach, the Crees and Chippewas north of Lake Superior, from which the latter in part made their way to the south side of this lake. We have followed the Delawares from the same region to the south of the lakes, thence eastward to the valley of the Delaware, whence they sent out offshoots to the hills of New England and southward into Maryland and Virginia. We have also found the Iroquois first in the area north of Lake Erie, which they had reached previous to the arrival of the Delawares.

Turning now to the Siouan stock, we are met by two diametrically opposite theories. The view which has prevailed until comparatively recently is that the group as a whole had its origin in the northwest. However, the discovery by linguists in the last thirty years that a number of small tribes that were formerly located in the Piedmont region of southern Virginia and the Carolinas belonged to this stock has resulted in bringing forward the theory that the pristine home of the stock was not in the northwest, but in the eastern portion of the United States, the particular section not being well defined.

Dr. Horatio Hale, who was the first to advance the theory, says: "Virginia and possibly the whole country east of the Alleghanies, from the Great Lakes to South Carolina" was occupied by Siouan tribes. He indicates the comparative antiquity of occupancy by expressing the

opinion that the Algonquins and Iroquois coming from the north found the Siouan tribes in possession of the region east of the Alleghanies, and gradually intruded themselves into their territory, but thinks "the displacement of these [Siouan] tribes was a very gradual process." He seems, however, to be of the opinion that their primary seat was west of the mountains in the Ohio valley, which view is adopted by Mr. Mooney, who suggests that, while the Tutelo and other Piedmont tribes crossed the mountains to the east, the other tribes moved westward in two divisions, one going up the chain of great lakes, the other down the Ohio.

This opinion of an eastern origin appears to be based chiefly upon the supposed archaic character of the eastern dialects and the tradition that the Quapaws, formerly known as the Akansea, resided in prehistoric times on Ohio River. Dr. Hale also remarks, in speaking on this point that some of the southwestern tribes formerly dwelt east of the Mississippi, as is evident from the fact that they are offshoots of the Winnebagoes, who dwelt on the western shore of Lake Michigan. John Lederer says the Indians of the Piedmont region of Virginia and the Carolinas declared that they had been driven by an enemy from the northwest more than four hundred years before the time of his visit (1670). Lawson states, in his *History of North Carolina*, that they claimed that their ancestors came from where the sun sleeps. According to a tradition of the Catawbas,—which, notwithstanding some incredible statements therein, appears to have a basis of truth and is partially confirmed by other data,—they came from the north by way of Kentucky River, and after a severe conflict with the Cherokees, finally settled in their historic seat on Catawba River; or probably first on the southern bank of Broad River.

On the other hand, it is argued by those who give the Siouan stock a western origin, that the tradition in regard to the Akansea has been erroneously construed and also modified by modern additions. The tradition, which was

first mentioned by Gravier, who descended the Mississippi in 1700, stated that the Ouabachi (Wabash, which then included the lower Ohio) "was called by the Illinois and by the Oumiamis (Miamis) the river of the Akansea because the Akansea (Quapaws) formerly dwelt upon it," which is generally accepted as based on fact. As the lower portion of the Wabash has since then been considered a part of the Ohio, the subsequent versions of the tradition are made to apply to points further up the Ohio, when, if properly interpreted,—for all, even those subsequently obtained from Indians, are but a rehash of what is given by Gravier,—it limits the position of the Akansea to the part below the mouth of the Wabash, as at present named.

It is apparent from the geography of the country that if these eastern tribes came from the great body of the stock in the northwest, they would have been in the valley of the Ohio at some time during their migration, and this would agree with their traditions. Is it not possible that they were some of the people with whom the Delawares warred while yet west of the Talega? Although chronological statements in Indian traditions are generally of but little relative value, it is nevertheless interesting to note the fact that the four hundred years of the tradition mentioned by Lederer (1670) is entirely consistent with the Delaware tradition as given by Beatty (Vol. II, p. 115).

In Licking and Adams Counties, Ohio, and Putnam County, Georgia, are the only effigy mounds east of the Mississippi, outside of the effigy mound region. These, which indicate the presence of a Siouan element, may be accounted for as well upon one theory as the other, as, according to both, such an element was at one time in the Ohio valley, and moved thence, in part at least, to the southeastern region.

Another important tradition bearing upon this subject comes from the Siouans of the west. Gallatin says that the tradition of the Iowas, Missouris, Otoes, Omahas, and Ponkas (all Siouan tribes) is that at a distant epoch they,

together with the Winnebagoes, came from the region north of the lakes, that the Winnebagoes stopped on the banks of Lake Michigan, while they continued their course southerly, crossed the Mississippi and occupied the seats in which they were found by Europeans. Belonging to the same group are the Kansas and the Quapaws. The Rev. J. Owen Dorsey, a recognized authority on the subject, unites the first three tribes into one sub-group, and the other five into another, looking upon the Omahas and the Quapaws as very closely related, which implies derivation from the same original stem. (See *The Indians of North America in Historic Times*, 338–340.)

If we bring the foregoing traditions and theories into relation one with another, the agreements and inconsistencies will become apparent, and some further light will be thrown upon the process of adjustment, which is the chief object in view here.

We notice, first, that if the Delaware tradition be substantially correct, the development of the Siouan element over the area east of the Alleghany Mountains must have preceded the appearance of the Delawares in that region, if, as Dr. Hale claims, the Algonquins were intruders upon the territory of the Siouan group. It is somewhat strange, if this Siouan element extended north to the lakes, that the Delaware tradition makes no mention of war with people found east of the mountains. Again, it is difficult to reconcile this early occupancy of the Piedmont region with the fact that, according to the Catawba tradition, the Cherokees were already in their historic seat when the Catawbas arrived on the scene. Unless the Catawbas appeared in the region very much later than other members of the stock, there is here an irreconcilable inconsistency.

The theory of a migration westward of the great body of the stock, partly up the lakes and partly down the Ohio, is, say the advocates of a western origin, beset with obstacles difficult to overcome or avoid. One of these relates to the Quapaws, or Akansea, as they were called at an early

day. According to the theory of an eastern origin the tribe moved down the Ohio, Dorsey concluding that they parted from the Omahas at the junction of Ohio and Mississippi Rivers (though the mouth of the Missouri would apply as well), the former going down stream and the latter up stream. Yet, according to the tradition mentioned above, which both Hale and Dorsey confirm by linguistic evidence, these and the other six tribes mentioned are offshoots from the Winnebagoes and came with them from some place north of the lakes. There is, contend the advocates of a western origin, an irreconcilable conflict in these views.

Without entering further into these opposite views of the pristine habitat of the Siouan tribes, we may add that, if the theory of a northwestern origin is adopted, there does not appear to be any conflict with the steps in adjustment which have been so far traced, and in addition thereto they seem to agree with the theory of general entrance into the section from the northwest.

According to the traditional and theoretical steps in the process of settlement and adjustment, the Muskhogean tribes must have been the first of the larger stocks to reach their historic seats; yet it is known that they did not find this southern region wholly uninhabited. The Natchez, who, by their traditions, were in ancient days a strong and populous nation, spreading over a large area of that southern section, must have been there when the Muskhogean hordes arrived. Besides these there were a number of other small stocks along the lower Mississippi and the coast of Louisiana and Texas which are presumed to have represented the earlier occupants of this southern region. Some of these small Gulf coast stocks were in a low state of culture when first encountered by the whites, but this was not true of all, as the Natchez and Tonika were as well advanced in culture as the neighboring Choctaws and Chickasaws.

Other stocks, as the Caddoan, which includes the Wichita, Pawnee, and Arikara tribes, and the Timuquanan family of Florida, must be passed with a mere mention, as

we know little or nothing of their origin myths. Faint traditions of the Caddoes seem to point toward the Rocky Mountain region as their original home; and of the Timacua we know less.

It will be apparent from what precedes, without presenting additional evidence, that the development of the stocks of the Atlantic section into tribes, and the advance in culture and in other respects was chiefly after they had entered the respective districts they were found occupying at the advent of the whites. Differentiation into tribes on the one hand and absorption on the other occurred to some extent during migration, but culture made but little advance among the tribes until they became to some extent sedentary and began to cultivate the soil as a means of subsistence.

## CHAPTER XXII

### *SOCIAL ORGANIZATION AND INDUSTRIES*

MAN, having found his way to the new continent, food and time were sufficient to spread population from shore to shore, and from the Arctic region to the tropics. But the newcomers had necessarily to adapt themselves to the changed environment in which they were placed; and as they developed in numbers, and scattered over the continent into districts varying in physical conditions, new implements had to be invented, new customs adopted, and new industries engaged in. Yet, as stated in a previous chapter, it is evident that if man entered the continent at the extreme northwest, in the postglacial era, he must have been sufficiently advanced in culture to know the method of procuring food, and how to protect himself from the cold in that inhospitable region; and, as we judge from his artefacts and other data, must have been in the neolithic age.

As mankind have been gregarious in habits in all stages of culture, there has always been some kind of social organization among them from the lowest stage of savagery upward. It may in some instances, and in some stages, have been nothing more than association for mutual defence and attack. In America, however, the social organization of the aborigines appears to have been, from the earliest times, generally based on the gentile system, or upon a form of totemism, the clan or gens being the social unit. A gens or clan is, according to Major Powell's definition, "an organized body of sanguineal kindred," either such in reality

or of those who have been adopted and thus given the status of kindred. Its members usually kept together as one community even among those whose habits were nomadic; or they dwelt together in one communal house where such structures were in use; or in the same village, pueblo, or locality. Each clan was supposed to have its chief and council. (See *The Indians of North America in Historic Times.*) For convenience, we use the term "clan" here in the broad sense of community of descent, whether in the male or female line. Although the gentile system may not have been universal, this was probably the prevailing plan of organization during the first steps of dispersion from the point of original entry, the coherence being at first very loose and the chieftaincy but little more than a mere name. But organization became more coherent and formal when the lines of dispersion reached the more temperate sections, and agriculture and sedentary habits were adopted; then the village or pueblo became the social unit.

The food quest in the early steps of dispersion was, in all probability, carried on by the first mentioned social bodies, which having no enemies to contend with at that early date, save the wild beasts, wandered apart seeking the choice areas. If marriage within the clan or group was prohibited, as is probable, two or three clans wandered away in company thus forming the nucleus of a tribe. The tribe, which is almost as difficult for the sociologist to define, as is species for the naturalist, is according to Payne, "a group of families really or theoretically consanguineous, holding in common a definite food-producing district, and governed, in accordance with established custom, by one or more chiefs who are considered to stand to the tribe in the same relation as the parents to the family, being at once its directors and protectors." This definition makes the tribe but little more than an enlarged clan, and lacks the reference to the subdivisions of the typical tribe as given by Morgan. However, our reference here is to the supposed early steps in organization.

The original social units (clans) by growth through natural increase, and by the absorption of other weaker groups ultimately grew into tribes. Language having developed in these primary groups by long isolation, formed the germs or beginnings of linguistic stocks. Some such process as this appears to have been the most likely method by which the larger linguistic groups were formed.

With this development of social life, were developed, to a corresponding degree, the industries adapted to this life so far as compatible with the environment. Although many of the implements, articles, and devices brought into use were to be used by the individual, yet a large portion had reference to the family and many to the clan, for in many lines of the food quest combination was necessary, or at least advantageous.

One of the most important articles in family and communal life is fire, which was brought into use at an early day in the history of the race. There are many traditions among the Indians, especially of the north, as to the method by which fire was obtained; but most of them are puerile in character. It is, however, unnecessary to discuss the origin of fire here, as we may assume with confidence that man had learned the art of fire making before he reached America, as people in the Neolithic or polished-stone age were undoubtedly acquainted with this art. Nor is it probable that a people who had learned the art of making fire ever lost it.

The earliest and simplest method of producing fire was by rubbing one stick upon another; and an almost as simple method was by drilling, that is by whirling a stick with the hands while the point is pressed against another and larger stick, or piece of wood. But the early fire makers soon learned either by some favorable accident or by reasoning out the subject, that, by winding a string once or twice around the drill and pulling it back and forth, the motion and pressure could be increased. Sometimes the drill, or whirling stick, was made more effective by weighting it with a circular stone, through which a hole had been

bored for the insertion of the stick. Stones of this kind have been found in California and elsewhere in the Pacific section.

Although it is assumed theoretically that savages in a low stage of culture first applied fire in cooking food by roasting or baking alone, the art of stone boiling was known to the inhabitants of the New World from the most remote date, possibly before pottery came into use. Heated stones were cast into a vessel filled with water, heating the latter to a degree sufficient to cook the food placed in it. It is probable, and we may say almost certain, that in the earliest stages the water was in a clay-lined, bowl-shaped depression, in which the food was placed and into which the heated stones were dropped.

Besides earthen pots, water jugs made of willow or other wickerwork, and rendered watertight by means of pitch, were invented and used in cooking, hot stones being introduced through the wide mouth to bring the contents to the required temperature; and it was probably the effort to protect the basketry used in cooking from the effects of the heat that caused coatings of mud or clay to be applied, which, being hardened by the fire, led to the manufacture of pottery. There was still in use at a recent date among some of the western tribes a "boiling basket," that is, a wicker jug rendered watertight, in which food was cooked as indicated. Among the Zuñis this basket was known as a "coiled cooking basket," and it is said that the Navahos still call an earthenware pot *kle-it-sta*, or "mud pot."

The Eskimo, who dwell in the cold arctic region, have need of fire above the people of all other sections; yet their country is without forests, driftwood has always been scarce, and if there was coal in the frozen soil they knew nothing in regard to its use or how to mine it. There was, however, the blubber or fat of the seal, whale, walrus, and other animals, which they learned to use in a lamp of peculiar construction; which not only gave light in the long, sunless winters, but supplied the place of the wood and coal fire.

These lamps, which were shallow dishes, usually of stone, semicircular in form, were sometimes two feet in length. Of the mosses and vegetable fibres which their section supplied they formed the wicks. "The Eskimo," says Hough, speaking of the lamp, "present the spectacle of a people depending for their very existence upon this household belonging. Indeed, it is a startling conclusion that the lamp has determined the occupancy of an otherwise uninhabitable region by the Eskimo, or, in other words, the distribution of a race." If Hough be correct in this opinion, to which we see no reason for objecting, it follows that the lamp has been practically in use among the people of this race since they made the arctic region their home. If this surmise be correct, a necessary inference is that the Eskimo from the time they adopted the lamp, chiefly of stone, as a means of supplying heat and light, were also acquainted with the implements necessary for, and the method of, capturing and killing the sea mammals and other animals which supplied the oil to be burned in the lamps, as well as how to form these lamps. This line of reasoning, if correct, carries back one industry and the manufacture of the implements and accompaniments necessary thereto to a very early date. The lamp in this instance was not only a family article, but was intimately connected with the clan system, as the capture and killing of these large sea mammals from which the oil was obtained required, in some cases, the united effort of more than the members of a single family.

Fire was made to do work for the savage as well as for the civilized man, to assist the native Indian as well as the white man. With its aid and stone celts, they felled forest trees, severed the trunks at the desired points, and formed them into dugouts, or canoes. "When the American Indians intended to fell a thick strong tree," says Kalm, "they set fire to a quantity of wood at the roots of the tree. But that the fire might not reach higher than they would have it, they fastened some rags to a pole, dipped them into water,

and kept continually washing the tree a little above the fire. Whenever they intended to hollow out a thick tree for a canoe, they laid dry branches all along the stem of the tree [after it was down], as far as it must be hollowed out. Then they put fire to those dry branches, and as soon as they were burnt they were replaced by others. While these branches were burning the Indians were very busy with wet rags and pouring water upon the tree to prevent the fire from spreading too far. The tree being burnt hollow as far as they think it sufficient, or as far as it could [go] without damaging the canoe, they took their stone hatchets, or sharp flints, or quartzes, or sharp shells, and scraped off the burnt part of the wood and smoothened the boats within. A canoe was commonly between twenty and thirty feet long."—(*Travels*, ii, 38, 1771.) Not only were the ordinary trees of the Atlantic slope thus attacked and shaped into canoes by the aid of fire, but the massive redwoods of the northwest coast were formed into boats capable of holding fifty men. From these survivals of customs until the whites appeared we are enabled to catch glimpses of the inventions, devices, and processes of prehistoric times.

Fire was not only used by the native as an aid in his industrial operations; it was also given a higher function, and although not actually worshipped in any part of the continent north of Mexico so far as known, was brought into use and made to take part in numerous ceremonies and sacred offices. We learn from the mounds that it played a part in most of the burial ceremonies; and in some tribes a sacred fire was kept constantly burning. This custom was probably handed down from very ancient times, for, before the fire drill was invented and brought into general use, a constant fire had to be maintained somewhere in each community that the households where it happened to die out might renew it. Hence, it at length assumed a sacred character, and, though the art of renewing it by fire sticks and other means had been known for ages, it was kept burning in the temples, and to specified watchers was assigned

the duty of guarding the sacred spark that it might not die out. However, this custom appears to have been confined to the temperate and tropical rather than to the northern regions.

There was a god of fire in the Mexican pantheon named Xiutecuhtli, also known as Ixcozauhqui ("yellow faced"), and Cuecaltzin ("flame of fire"). His idol was in the form of a naked man, with the chin blackened, and wearing a lip jewel of red stone. The sacrifices to him were unusually cruel even for Mexican priests. After the human victims had been partially roasted on beds of hot coals, their breasts were opened and their hearts were extracted.

The earliest inventions and devices, as well as those of most importance in the early stages of the race, were those intended as aids in procuring food. Whether man was at first a vegetarian or carnivore is immaterial here, as we know that from the most remote date to which we can trace him by the remains and marks which indicate his presence, he obtained food both from the vegetable and animal kingdoms. In his war upon the latter various devices were brought into use at a very remote date.

Theoretically, the club, which could be used without any special preparation, and the pebble from the brook, which could be cast with the hand, formed the first types of implements used for obtaining animal food. However, it is unnecessary for us to consider here these earliest devices, as the first men who appeared in America, if postglacial as we have assumed, had risen above this primary culture stage. The bow and arrow and spear or lance had been long in use in Asia before they left its coast, if, as we have assumed, the landing was on the north Pacific coast. If there were landings elsewhere and from other quarters, the same assumption, as stated in a previous chapter, will hold good. That the bow and arrow and also the spear have been in use in America from the earliest times, and very generally throughout the continent, is proved by the great number of stone arrow and spear heads found in most sections.

The great variety in material, form, proportion, and finish of bows and arrows, of different tribes and of those intended for different uses, cannot be referred to here, but have been well described and figured by Professor Mason in the *Smithsonian Report for 1893*. Not only did these weapons aid man in his savage state to reach the smaller or ordinary mammals which were too swift of foot for him to overtake and the birds which settled in the trees above his head, but they enabled him to meet and battle with the ferocious beasts, whose strength or means of destruction were greater than his own when unprovided with means of defence or attack. With these seemingly puny weapons he was able not only to battle with the panther, lynx, and great bear, but could bring down that largest of American food animals, the buffalo. Unfortunately, the use of the bow and arrow in the hands of the aborigines did not stop with the war on the animal kingdom, for they were also used as weapons in wars with one another. The spear was also a weapon in common use from early prehistoric times, being better adapted to killing fish and marine mammals than the bow and arrow. Whether the first immigrants brought with them a knowledge of the harpoon, except possibly in the simple form of a barbed spear, is very doubtful, the completed harpoon of the Eskimos being a very complicated device.

Other devices for killing and capturing food animals were in use far back in prehistoric times, though we have to judge of their form and character very largely by survivals observed by early European explorers, as they consisted largely of perishable materials.

In the Huron-Iroquois archæologic district as limited in the *Twelfth Annual Report of the Bureau of American Ethnology*, a few bone fish hooks have been discovered, but the bone harpoon or barbed fish spear occurs in greater numbers, showing that the latter weapon was in more general use than the former. Remains of ancient fish weirs have also been discovered in this district, and some have also been found in the Southern States. One is mentioned by one



Totem pole from Skidegat.

*Now in the Royal Provincial Museum, Victoria, British Columbia.*

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of De Soto's chroniclers as seen in Arkansas; and there had evidently been, in prehistoric times, a weir, or an arrangement of some kind for trapping fish, in the great ditch around the Etowah mound group in Bartow county, Georgia. Fish pounds of stakes were used by the Indians of New York and Canada and were observed by early navigators along the coasts of Virginia and North Carolina, a figure representing one of them being given by De Bry, from a drawing by White, who accompanied the Raleigh expedition.

According to Hubert Bancroft, the California Indians were poor hunters but understood very well the methods of capturing fish, which were in ancient times abundant in the streams and bays of California and Oregon. Sometimes they constructed a dam of interwoven willows across a rapid at the time the salmon were ascending the river; niches four or five feet square were made at intervals across the dam in which the fish, pressed on by those behind, collected in great numbers and were easily speared or netted. Spearing by torchlight was also a common method of capturing the finny prey; a method which seems to have been common among the Indians of most sections, and to have come down from very ancient times. In the Pueblo district and among the civilized nations of Mexico and Central America, where reliance for the food supply was chiefly upon the cultivation of the soil, the natives were indifferent hunters and resorted to the chase and fishing only in times when the crops failed, or there was a craving for animal food. Nevertheless, the Mexicans had their fishermen's god, Opuchtli, "the left-handed," to whom they ascribed the invention of their fishing implements. The weapons of the Pueblo region, both of the village and semi-nomadic tribes, were chiefly bows and arrows, spears and clubs. The animals hunted were mostly deer, hares, and rabbits, though fishing was resorted to where there were streams. Fishing nets made of twisted thread, or of small sticks joined together at the ends, were used; and when the streams were low, fish were caught in baskets, or shot with arrows to which a string was attached.

According to the reports of the early historians a number of the tribes of Chihuahua, Durango, and Sinaloa, Mexico, formerly fed on human flesh and hunted human beings for food as they hunted deer or other game. This statement, though somewhat startling, is fortified by appeal to such authorities as Padilla, Castañeda, Arlegui, and Ribas, who are accepted as generally reliable. The weapons formerly used by the natives of northern Mexico were bows and arrows and clubs, though it is said that the chiefs and leading warriors carried short lances and bucklers. Flint knives were carried to mutilate the bodies of the slain.

The fact is mentioned by some of the early Spanish historians, that, in ante-Columbian times, the Mayas of Yucatan used snares by which to capture the small native deer of that section. Fortunately we have in this instance, what is unusual,—ante-Columbian evidence of the truth of this statement. Some of the plates of the Troano codex—an ante-Columbian, Maya manuscript—show the method by which deer were ensnared. It seems, from the colored figures, to have been done by trimming off the branches of a sapling or small slender tree, which was then bent down, a cord with a slipknot was fastened to it, and some pieces of wood were so arranged that when they were touched by the deer's fore leg the tree would spring up and the leg of the unfortunate animal would be caught in the loop of the cord, lifting his fore quarters from the ground, thus preventing him from using his hind feet to disentangle himself. The Zapotecs and Mixtecs were accustomed to capture deer by traps and nets. The Zoques were fond of iguanas and of parrots, and killed the latter with stones.

War, the contest of man with man, dates from the beginning of the race. It was doubtless at first a contest of individual with individual, but animals learn the advantage of hunting in packs, and of combination in attack; and man must also have learned the same fact at an early date in his history. Combination requires some kind of understanding, some incipient or intuitive organization; even

animals seem in some instances to have learned the advantage of a leader. How among men he was first selected or appointed we do not know, but the fact that there were leaders in some instances, possibly self-appointed, we do know. Yet, among some of the Dené or northern Athapascan groups, tribal organization, even in historic times, has been so loose as hardly to deserve the name, the leader often being self-appointed.

We may assume as substantially correct, or at least as applicable to the aborigines of North America, the statement by Mason, that "not even in the lowest grade were men devoid of discipline." In the early stages of dispersion when the food supply was the principal object of all activities, war and defence were chiefly by clans (we use the term in its broad sense without regard to the line of descent), as these bodies formed the moving, dwelling, and camping groups, until tribes and tribal organizations had been developed. Many of the groups in northwestern British America, which have received names as tribes, are simply clans. Similar small segregated groups, or groups living as distinct, loosely organized bodies, were found in southern Texas, northeastern Florida, and along the Atlantic coast to southeastern Virginia, when these sections were first visited by the whites.

The war club, though doubtless a primitive weapon brought into use far back in the prehistoric era survived into the historic age, though changed from its simple form to a more complicated weapon. The Sioux club was a carefully prepared flat piece of wood, curving and widening away from the grip and terminating in a spherical head, which in modern times carries a long spike. As the material used was perishable, specimens of the form from which this was developed have long since ceased to exist; but it is possible and quite probable that some of the rather large flints classed as spear heads were used in place of the modern spike in the Sioux club. The well-known and oft-described Mexican weapon which is spoken of by the

early historians as a "sword" belonged more correctly to the club type. It consisted of a rather heavy, prepared stick, along one or both edges of which was a groove in which were inserted sharp obsidian blades. This was a formidable weapon in the hands of the warrior who had learned properly to wield it.

According to John Smith, the Indians of Virginia often used as a weapon in their warfare a spike of deer-horn put through a piece of wood in the form of a pickax. Although the *atlatl*, or throwing stick, by which to cast the dart or spear with greater force, was used chiefly in hunting, it was, with the Mexicans and Mayas, a device for the warriors also. It is shown frequently in the Mexican and Mayan codices where pictures are given of warriors hurling javelins with this implement. At the southern extremity of Panama the weapons of war formerly used by the Indians included not only the bow and arrow, the spear and javelin, but also the flint-armed club, and the blow-gun with poisoned arrows; the throwing stick was also in use here. It is somewhat strange that one or two of the tribes in this southern section did not use bows and arrows; an exception which Hubert Bancroft says is the only one he is aware of to the rule which prevailed from the Gulf of Uraba to the Arctic Ocean. The Musquitos of eastern Nicaragua, it is said, added to the usual list of weapons a kind of sword made of poisonous wood, a prick of which penetrating the flesh resulted in death.

We can judge of the method of making war, of attack and defence, and of conduct in battle, only by the observations of historic times and by certain monuments and remains which are evident indications of the wars of the prehistoric era. The hill forts of Ohio, the remains of ancient forts in the Huron-Iroquois district, the enclosures and ditches of the southern sections, and the buttressed fortifications of Wisconsin and Indiana, are reminders of the struggles of native tribes in the distant past to defend themselves against the attacks of dangerous enemies.

Professor Mason remarks, in his *Origin of Inventions:* "It is not to be supposed that war was ever the normal occupation of any people." Somewhere in one of the numerous histories and writings relating to the long war between the Iroquois and the French there is a statement, if memory be correct, of an Iroquois leader, who, being asked why he did not cease to war upon his fellow men, replied that to war was necessary to the Iroquois nature. In fact, from the war on the Hurons to the close of the Sullivan campaign, it may be said that war was the "normal occupation" of the Iroquois. Bancroft, speaking of some central Mexican tribes, says: "Aboriginally, as with most northern nations, warfare was the normal state of these people."

The enclosed villages from Florida to the St. Lawrence seen by the first explorers, and the remains in the mound region which indicate a like condition in former times in that section, would seem to show that war was then largely the normal condition. The cave dwellings and cliff houses of the Pueblo region, which have been described in a previous chapter, point, as we have already remarked, to a state of bitter warfare. The defences about the villages in the Atlantic section, as seen by the first explorers, were mostly palisades, made of beams thrust into the ground side by side in a great circle, usually overlapping at the end so as to form an easily defended entrance way. Sometimes there were double and even triple walls, strengthened with braces and cross beams. Whether the ancient enclosures which have been described in a previous chapter were provided with a stockade is yet an unsettled question. However, it may be assumed with confidence that the so-called hill forts, where the positions were naturally strong, as Fort Ancient, in Ohio, were not. On the other hand, some of the ancient enclosures in the Huron-Iroquois district, of which in most cases only traces remain, mark beyond question the sites of former stockades.

Although there were some enclosed pueblos in the territory of the civilized nations of Mexico and Central America,

this was the exception rather than the rule. Tenochtitlan, the ancient City of Mexico, depended upon its isolated position as an island in a lake and upon the bravery of its soldiers to defend it against attack from the outside, though the interior temples and royal residences were fortified against internal uprisings. While there are remains of ancient fortifications at a few points in southern Mexico and Central America, yet the more important cities appear to have been without surrounding walls. At least no indications of such walls have been found at Mitla, Palenque, Chichen Itza, or Quirigua, nor is it certain that the opinion of some explorers that Uxmal was surrounded by a wall is well founded. Bancroft (*Native Races*, ii, 788) says: "None of the Yucatec cities appear to have been located with any view to defence, or to have been provided with fortifications of any description." On the other hand, the towns of Guatemala and Chiapas appear to have been located in easily defended positions, and, according to Juarros, were provided in some instances with defensive works.

We have stated that by the relics, especially those found in the mounds and ancient ruins, we might learn something of the household, something of the daily life and customs among the prehistoric people.

The numerous specimens of pottery found in almost every section, save in the extreme north, furnish evidence that the ancient households were amply supplied with the useful articles of this class. Nor were they limited to a single type, but were diversified in form and size, indicating different uses. In some, at least, of the ancient households of the Pueblo region and the Atlantic section, and also among the more advanced nations of Mexico, could be seen not only the conventional pot and bowl, but—though rare in Central America, especially in Yucatan—the jug, bottle, platter, dish, and other forms made to please the fancy as well as to meet necessities. In other sections, where pottery could not be manufactured or was not made, articles of other material took the place of pottery.

In general, it may be said that the household utensils of the prehistoric people were made of various materials, of which earthenware was the one of most general use. There were trays, boxes, buckets, and cups of wood. Others were of whalebone, soapstone, slate, and bone. Spoons and ladles of horn, of wood, and of shell have been found in the mounds, especially of the lower Mississippi region. The knives and scrapers, and skinning, scaling, and cutting implements in general, were chiefly of stone throughout the continent, though articles of bone, horn, shell, and wood were made to do duty to some extent by the ancient housewife. Ratzel briefly summarizes the household effects of a family of forest Indians as consisting of earthen pots of various sizes and shapes, of rude benches, of a few wooden plates and dishes, of plaited baskets and mats, and of leathern and hide pouches. It is not probable, however, that benches were much in use in former times, as Indians generally sat or squatted on the ground. Many pieces of pottery, some of the images and many of the figures in the Mexican and Maya codices show this to have been the usual position.

Other important articles of the household in the maize-growing tribes of the forest sections were hominy mortars and pestles, and mealing stones, or metates, and the rubbing stones in the treeless areas of the Southwest and in Mexico and Central America. Nor should we omit to mention the pipe with which the hunter solaced himself, at least in late prehistoric times, though it is maintained by at least one author that it was not smoked as a luxury or pastime until after its adoption by the whites.

After the Aztecs had founded their new city of Tenochtitlan in the border of Lake Tezcuco and were yet too feeble to make war on their neighbors, hunger compelled them to support themselves on what they could obtain from the waters, having as yet no hunting grounds. They accustomed themselves at that time, it is said, to eat not only the roots of aquatic plants, snakes, and axolotls,—a kind of water lizard, or newt,—but also ants, flies and their eggs, when

the supply of fish and water fowl proved, from any cause, insufficient; for, as it seems, their opportunities of obtaining food of the latter kind were at first restricted. Having used the wretched food mentioned in the days of their early struggles, they did not entirely renounce it when prosperity came; hence, their markets were supplied with flies, which were considered edible and were exceedingly abundant, ants, grasshoppers, and larvæ from palm trees or from the agave, raw, fried, or roasted, which the poor usually bought. Nevertheless, in the usual Aztec banquets, the dishes were many and varied.

As the Aztecs began to acquire ground, maize became the leading article of food, of which, as throughout Mexico and Central America, they formed a species of cake which was their bread. The usual process was then, as it has been in modern times, first to boil the grains in water to which lime or ashes were added, by which they became swollen and softened. They were next pressed with the hands to remove the chaff and then ground or crushed in a metate. By flattening this paste with the hands, they made a cake called a "tortilla," something like a thick pancake, which they cooked on a hot stone, or, in later years, on a round piece of clay called "comalli," placed over a wood fire. The women of this land, where maize was probably first brought into use, made bread in this way long before Columbus reached the islands of the New World, and, with some improvement in utensils, make it somewhat in the same way at the present day.

Although the Aztecs had the reputation of being frugal in their diet, eating but little meat, yet, if we are to believe the early writers and some of the modern authors who have given attention to the subject, at their banquets and on the tables of the wealthy were found deer, peccaries, rabbits, large moles called "tuzas," techichis, fish, turtles, iguanas, turkeys, quails, and several other species of birds. The only eggs they ate were those of turkeys, iguanas, and turtles. Yet we are told that notwithstanding this abundance,

of which the vegetable and fruit side has not been named, they had neither milk, butter, nor even grease (Biart, *The Aztecs*), though the entire absence of the last seems unaccountable.

Although baskets are made of perishable materials, we have undoubted evidence of their manufacture and use in the prehistoric era; and there is also evidence of the ancient use of matting, which may be included in the general class, "basketry," without an unwarranted stretch of the rules of classification. There is found in southwestern baskets, as we are informed by Professor Mason, who has devoted much time to the study of basketry and has written the most extensive work of modern times on the subject, a certain style or stitch, a kind of double wicker, which is also found impressed on the oldest pottery found in ancient graves. Impressions of another style, which the author named terms the "twined weaving" or "split warp filaments," are found on fragments of ancient pottery in the Atlantic States. Impressions of basket stitches of various patterns are found on the ancient pottery of the Iroquois district, the Cherokee country, and elsewhere. In fact, Professor Holmes concludes from the patterns represented on pottery, that the art of basket making was universal among the ancient tribes of the mound section, and, we may add, in the west and south as well; since pottery making is now conceded to be an art derived to a large extent from the use of baskets, or that basket making preceded the manufacture of pottery in North America.

In ancient times, the Aztecs and Mixtecs of Mexico wove baskets and mats of great fineness, which they ornamented with various designs, and mats were made and used for diverse purposes by the several Maya tribes. Numerous specimens of matting have been discovered in the mounds, especially that variety made of split reeds. How far back in prehistoric times we must go to reach the beginning of this industry cannot be determined; however, if the surmise that the manufacture of baskets preceded pottery making be correct, the date must be very remote.

An interesting account of the so-called "Ancient Basket-makers of Southeastern Utah" is given by George H. Pepper in his paper with this title, published in the *Journal of the American Museum of Natural History*, 1902. We allude to it especially because, it seems, the author is inclined to believe that we have here positive evidence which carries back the art of basket making to a remote date. The evidence referred to consists of certain baskets found in caves and excavated rooms which were used in connection with burials, in the sides of the Grand Gulch, in southeastern Utah. In the caves were certain depressions which seem to have been used by the ancient inhabitants as burial places. The bodies buried here were doubled up and placed on the bottom of the depressions, or holes, then covered with feather or rabbit-skin robes, over which were placed inverted baskets, either several small ones to a grave or one large carrying basket. "No matter," says Pepper, "what the character or quality of the other mortuary articles might be, the basket was almost invariably in evidence." The mummified bodies found in these burial places testify to the dryness of the caves. The editor adds, at the end of Pepper's description, that "the various types of baskets mentioned in this description, . . . are also to be seen in the basketry of the Indian tribes now inhabiting California and other parts of the western United States." It is probable, therefore, that these articles, although belonging unquestionably to the prehistoric era, are not to be ascribed to so remote a date as the author is inclined to assign them. It may be correctly assumed that baskets were, as a rule, more in use among people who relied largely upon seeds and fruits for their food supply, as did many of the tribes of California, than among those whose chief reliance for subsistence was upon a flesh diet.

Next in importance to food, at least in the northern sections, was clothing. As we have assumed that the theory of an original and chief entry of population at the northwest extremity of the continent has most evidence in its favor,

we can confidently conclude that the people who formed the first colony, as well as their descendants while they remained in the northern section, had learned and adopted the method of clothing themselves sufficiently to form a protection from the severe cold of that region. That this clothing was derived from the animal kingdom may be taken for granted, for the original immigrants were no doubt acquainted with the sea mammals, such as the seal, otter, walrus, etc., and with the method of capturing and killing them. Such, we know, was to a large extent the character of the dress of the northwest coast tribes when first visited by the Europeans. As the immigrants increased and spread into the interior and southward, and were forced to rely chiefly on the chase and the native fruits and vegetables for subsistence, their clothing then necessarily consisted largely of the prepared skins of land animals; but as they reached regions of milder climate, the materials proper for cloth were found and the method of making it was invented. Fibres of various kinds and the hair of certain animals were utilized for this purpose.

The art of making or weaving cloth grew out of the knowledge of textile work in basketry, the change being to more slender and pliant threads. The first step, therefore, was the twisting or spinning the yarn or thread. Whether hand weaving without the aid of loom or frame of any kind was ever practised in North America is not positively known; however, as it is known to have been in vogue elsewhere, there is little doubt that it was practised to some extent here in early prehistoric days. "Every region of the earth," says Professor Mason, "has its own string. The Arctic peoples prepare thread and twine of sinew, some of them as fine as our best cotton, only stronger. . . . In Mexico and South America the pita fiber and cotton furnish the principal staples, but all over temperate North America the *Apocynum cannabinum*, or Indian hemp, was made into yarn and twine and woven into cloth. The hair of ruminants and of the dog easily lent itself to the spindle, and among

some tribes skins with the fur on were cut into very thin strips, and these were twisted and woven into blankets." The thread was also formed from the inner bark of various trees and from other vegetable fibres, according to the productions of the different sections.

The numerous instances in which fragments of cloth preserved by contact with copper have been found in mounds and the many vessels or fragments of pottery with cloth impressions upon them which have been taken from mounds and ancient graves are so many positive evidences of the manufacture and use of cloth in the prehistoric era. We have, however, no data by which to judge as to the precise time when it was brought into use north of Mexico save the indications furnished by the mounds and the cliff dwellings where remains of cloth have also been found. Our only means of judging as to how general its use was as clothing is from the drawings and statements of early explorers. The figures of the savages of the southern Atlantic States drawn by Le Moin and White and published by DeBry indicate its use in dress to but a very slight extent. It is seen in one or two of Lafitau's figures, though his descriptions of the dress of the Indians north of the Gulf are almost entirely of that made from the skins of animals.

Hennepin, who had ample opportunities of observing the customs of the Illinois Indians among the interior tribes, speaks thus of their customs, dress, and household articles, which were the same as they had used in prehistoric times: "Their knives, axes, and other instruments are made of flints and other sharp stones. . . . Their captains are distinguished from the soldiers by red scarfs, made from the hair of bears and buffaloes, that are curiously wrought. They have abundance of game; and their soil is so fertile that their Indian corn never fails, and therefore they never labor under famine. They sow beans and melons which are excellent, especially those whose seed is red. They greatly esteem their citruls though they are none the

best. They dry them up, and keep them till the winter and spring. Their cabins are very large; they are covered, and paved with mats of marsh-rushes. Their dishes are of wood; but their spoons are made of the skull of wild oxen [buffaloes] which they cut so as to make them very convenient to eat their sagamite. . . . They have no other clothes but skins of beasts which serve to cover their women for the men go most of the year stark-naked."

In another place, speaking of Indians of the same section, he says: "The women spin the wool of the buffaloes, and make sacks thereof to carry their flesh in, which they dry in the sun or broil. They have no salt and yet they prepare the flesh so well that it keeps above four months without breeding any corruption. They commonly boil it [when they cook it]. . . . They make use only of the thinnest part [of the hide], as that of the belly, which they dress with the brains of all sorts of beasts, and thereby make it as soft as our chamois skins. They paint them with several colors, and adorn with pieces of porcupine skins [probably quills] red and white, so that the gowns they make thereof appear splendid at feasts and on other solemn occasions. They make other gowns wherewith they cover themselves during the winter; but these plain gowns covered with curled wool are in my opinion the finest as well as the best."

We have quoted Hennepin's statement in regard to the customs and articles in use among the Illinois as an illustration of the customs and articles in use among the interior tribes of the temperate region of the Atlantic section in later prehistoric times. It will be observed, however, that this explorer makes no mention of cloth manufactured from fibre by the Indians alluded to. But in speaking of the Indians of Arkansas he says that their chief wore a white gown made of cloth of the bark of trees, which their women spun. Le Page du Pratz says that the bark used was that of the mulberry tree.

## CHAPTER XXIII

### *DRESS, ORNAMENTS, AND INDUSTRIES OF THE CIVILIZED TRIBES*

Because of the perishable nature of dress among the tribes north of Mexico, and because of the lack of records and figures, data regarding it in the prehistoric period are very meagre, but evidence on the other hand in reference to the fabrics and dress of the cultured tribes of Mexico and Central America in the prehistoric era is sufficient to give us a fairly correct idea in regard thereto. Besides the descriptions of the early Spanish authors, who judged not only from personal observation, but from tradition and other native data, we have the pictorial representations in the codices and inscriptions. As the tribes cultivated both cotton and the maguey plant to a considerable extent after they had been brought into use, there was an ample supply of fibrous material for the manufacture of cloth and other textile fabrics, without resort to wild, uncultivated plants. However, according to the historians who have collected the traditions of these cultured tribes, the dress of the people at the earliest period was scanty and consisted, as in the early days of other sections, of the skins of animals. When agriculture became the chief reliance for the food supply, and culture advanced, the garments were made of tanned and prepared skins, later of maguey and palm-tree fibres, and lastly of cotton. Such, at least, is the order of progress given by the early historians as gathered by them from traditions and the "pinturas."

The males of all the Nahua tribes of central Mexico made use of the *maxtli*, or breech cloth. This, with the Aztecs, in very early times, is said to have been a kind of matting woven of the roots of a plant which grew in the lake in which Tenochtitlan was situated. The use of cotton by the Mexicans began, according to traditional history, in the reign of Huitzilihuitl, about the commencement of the thirteenth century. This may be correct if limited to the Aztecs, but cotton had been in cultivation long before that date, as it was in use among the Toltecs, who preceded the Aztecs, and was certainly cultivated by the Maya tribes before the inscriptions were chiselled.

The principal articles of dress among the civilized tribes, according to the descriptions of the early historians and as confirmed in part by the codices and inscriptions, were in ante-Columbian times as follows: The *maxtli*, or breech cloth, worn by the males of all classes, was usually about twenty or twenty-four feet long, some eight to ten inches wide, and more or less ornamented at the ends with colored fringes and tassels. It was passed between the legs and wound about the hips leaving the ends hanging down, one in front and one behind. In the magnificent figure known since Waldeck's day as the Beau Relief, on the wall of one of the small temples at Palenque, there is, in addition to the beautiful *maxtli*, a short skirt of fine, closely woven cloth; and a similar skirt is seen in some other Palenque figures.

The men also wore a kind of mantle which is described by several of the early authorities as merely a piece of cloth about four feet square, worn over the shoulders, the upper corners tied in a knot on the breast; or thrown over one shoulder and knotted under the arm. This description, however, will not apply throughout, as we know from the codices (Dresden Codex, plates 25–28) and the inscriptions, as one at Menche, that the mantle was in some instances a rich garment, rounded below somewhat like a long, narrow cape of the present day. Those on the plates of the Dresden Codex are represented as worn behind in some

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Traditional method of Hopi hair dressing : mother and daughter at the Pueblo Shepaulon. *From photographs by A. C. Norman.*

instances, and in others in front. The margin is usually fringed, and there is in some instances a broad sub-marginal stripe. A most beautiful and richly ornamented mantle is represented in one of the inscriptions at Menche, a cast of which is now in the United States National Museum.

Some of the finest cloth manufactured by the ancient Mexicans and made into mantles and other articles of dress, though consisting of cotton fibre as a basis, had, it is said, interwoven with it the delicate hair of rabbits and other animals, which made a cloth of great warmth as well as of great beauty. But that fabric which more especially attracted the attention of the early Spanish invaders, which is represented in the paintings and inscriptions, and of which a few specimens of the many sent to Europe were preserved until modern times,—one or two are yet in existence,—was the so-called *plumaje*, or feather work. Feathers of most brilliant colors, taken from parrots, humming-birds, and other bright-colored feathered denizens of the forests, were pasted on a fine cotton web and made into mantles for the leading priests and the principal personages of the tribes. "Never did I behold," said Count Carli, of a specimen he saw in Strasburg, "anything so exquisite, for brilliancy and nice gradation of color, and for beauty of design. No European artist could have made such a thing."—(*Lettres Américaines*, let. 21, note.) However, feather work was not limited to the civilized States of Mexico and Central America, as it was in use to some extent among the Indians of the Atlantic section and other regions north of Mexico, but this was of coarser materials, more sombre feathers, and poorer workmanship.

The poorer class of Mexico and Central America used very largely for clothing the *nequen*, or cloth woven from the fibres of the maguey plant. However, no mention is made of cloth used in Yucatan which was woven of any other material than cotton, though it is said that the Cakchikels of Guatemala made use both of bark and maguey fibre.

The dress of women was quite uniform in prehistoric times throughout most of the cultured tribes. The *huipil*, or chemise, and the *nagua*, or petticoat or skirt, were the chief articles and were in universal use. The former was without sleeves, or these, if present, were very short; it reached to a little below the thighs. The petticoat or skirt, which was fastened about the waist, reached nearly or quite to the ankles. The figures in the Dresden Codex show that the latter were very often ornamented with square notches around the bottom and a broad submarginal strip of a different color from that of the body of the skirt. These two garments are mentioned by the historians as the chief articles of female dress; however, one of the inscriptions at Palenque shows very distinctly a neat cape, reaching only below the shoulders, with deep fringe around the edge. In this instance the cape, which appears to be thrown over the *huipil*, or upper garment, and the skirt are crossed diagonally by narrow, rib-like stripes dividing the surface into diamond-shaped figures.

Although the articles of dress among the Mayas were substantially the same as among the Mexicans, yet the milder climate caused much less attention to be paid to dress and personal adornment by the former than by the latter; in other words, the Maya dress was generally more simple and much more uniform among all classes of society than among the Mexicans. However, a study of the monuments and inscriptions shows some exceptions to this rule. Not only is there the rich cloak or long cape of the priest at Menche, already alluded to, which is a most beautiful garment, worked into diamond-shaped figures with interior diagonals and serrations, but in the same ruins are representations of equally rich and beautifully ornamented skirts, reaching to the feet of the wearer. The headdress of the priests represented in the inscriptions at this place is peculiar; it is somewhat in the form of the tall, slightly spreading silk hat of a few years ago, but without a rim, and divided into cross or encircling ribs or rib-like divisions.

The inscriptions and sculptures at Chichen Itza show a short feather cape on the chief warriors which covers only the shoulders, not reaching below the breast. Here we also see the row of tall feathers running back over the head and down the back, like the feather decorations of the modern Indians of the Western plains. Some of the soldiers represented at this point also wore a short skirt, reaching from the waist to the middle of the thighs, variously ornamented with ruffles or double fringes. Another garment worn here by the men, which is distinctly painted in colors on the walls of the so-called gymnasium building, was a close-fitting white cotton sleeveless shirt, reaching to the hips.

The costume of the Mexican warrior, as shown in the codices, was different in several respects from that of the Maya soldiers, the chief article being in some instances a close-fitting coat, apparently padded, reaching nearly to the knees. These were fastened in front with what seem to be ribbon ties, and were of different colors, each, however, being of only one shade, a few being white. Another garment worn by them was a loose sleeveless shirt, reaching from the neck to the knees, and in some instances to the feet; these are usually white. The footgear worn by the two sexes, consisted simply of sandals made of leather or of agave thread.

Hubert Bancroft says that it is difficult to form a definite idea—that is, from the early authorities—of the Maya methods of dressing the hair, "save that all allowed it to grow long, and most persons separated it into tresses, winding some of them about the head and allowing others to hang down the back." However, the codices and inscriptions show two very distinct methods of wearing the hair by the Maya women. One was to form it into two bunches, one on each side of the head, being parted in the middle; in the other method it was also parted in the middle, but was allowed to hang down the sides and back in full-length tresses. This difference seems to have distinguished the married from the unmarried state.

We have referred particularly to the costumes as indicated in the codices and inscriptions, because most authors who have alluded to the customs relating to costumes or clothing have relied upon the statements of the early Spanish writers.

The Aztecs and Central Americans, but more especially the former, were very fond of jewels and personal ornaments. Besides the feathers used in their cloaks and headdresses, and the small golden figures and precious stones worn in their clothes, they ornamented their ears and lower lip with them, and loaded their necks, their arms, and their legs with collars, bracelets, and rings.

There was, however, one type of articles in use among the Mexicans in prehistoric times that is yet an unexplained puzzle to antiquaries. These were certain stone yokes, which Dr. Fewkes, who has been recently exploring in Mexico, has studied with some care and has kindly described for us as follows:

None of the antiquities from Mexico have more completely baffled archæologists than the remarkable objects of stone in the form of massive yokes. So far as known, this type is peculiar to Mexico and is limited to the eastern central region, Vera Cruz, Puebla, Chiapas, and adjacent States. There is little variation in the form of these yokes, which are usually of a horseshoe shape, but the free ends are sometimes united, thus forming a stone oval ring. As a rule, the surface is ornamented with relief decorations representing heads, human and animal, bodies and limbs, smooth or covered with elaborate tracery. Among animal designs those representing frogs, serpents, and birds are most common. Many have figures of death's heads, skulls, or portions of the human skeleton, cut in relief on their outer surface.

Numerous theories have been suggested to explain the use of these yokes. The commonly accepted explanation is that they were placed over the body or neck of the victim while on the sacrificial rock during immolation. Other writers, finding no confirmation of this theory in

ancient picture writings or historical documents, regard the yokes as objects of worship, and the figures upon them as representations of supernatural beings. Another theory is that these objects were connected with phallic worship, that they are symbols of the powers of germination representing sun, serpent, earth, or death gods.

It has been suggested that there is some likeness in use or function between Mexican stone yokes and Porto Rican stone collars, but, so far as their form is concerned, this resemblance is only of the most general kind and breaks down completely in a comparison of details. None of the theories thus far suggested for either of these types of prehistoric objects is satisfactory, and their meaning remains enigmatical.

The interior decorations and furniture of the ancient Mexican houses displayed in those of the better class a rude magnificence. The floors were usually covered with a hard, smooth cement, rubbed with ochre or gypsum, and polished. The smooth walls were painted, and often hung with cotton cloth and sometimes with feather work as tapestry. However, the furniture was scanty, consisting chiefly of soft mats and cushions of palm leaves or fur, low tables, and small stools with palm-leaf backs. The beds were made of rush mats, more or less fine, two or more often being piled one upon another, a cushion or a wooden block being used as a pillow. Sometimes coverlets of cotton or feather work were used, but ordinarily the only coverlet was the mantle.

It seems, notwithstanding their advancement, that the Aztecs and the Central Americans also were in some respects behind some of the northern Indians, as they were unacquainted with lamps or candles, their lights chiefly being torches, for which in the temples and great houses in Central America there were special receptacles along the walls. Clavigero, who was in Mexico at a date sufficiently early to see survivals of some of the prehistoric customs, says that at their meals, "instead of using a table they spread

a mat on the ground;" they also used napkins, plates, porringers, earthen pots, jugs, and other vessels of fine clay. The Mexicans, as we know from numerous surviving specimens, were great potters in ante-Columbian times. This writer, however, adds that he could not discover that they made use of either knives or forks. He also states that the drinking vessels of the Mexicans were made of a fruit similar to the gourd; some of which are large and perfectly round, which they call *xicalli*.

Next to maize, of which we have spoken somewhat fully in a previous chapter, cacao was, perhaps, the crop to which most attention was paid in Mexico and Central America. It was called *cacaguat* in Nicaragua, and was gathered from February to April. Other plants which were cultivated were cotton, beans, pepper, and a number of native fruits. Bees were raised and honey was an article quite generally in use, especially among the Mayas of Yucatan. This industry is made the subject of some two or three plates of the Manuscript Troano, one of the Maya Codices. The people of the civilized tribes, especially of Central America, appear to have been much addicted to drunkenness in prehistoric times; and had managed to bring into use some half a dozen or more intoxicating drinks.

Much has been written in regard to the traders and mechanics of Mexico, who seem to have formed important classes of citizens in ancient Mexico and Central America. Special deities were their guardians and special festivals and ceremonies were appointed by the priests in behalf of their industries. The traders are also frequently represented in the codices.

Weavers were numerous among the ancient Mexicans. They supplied the place of wool with cotton; that of silk with feathers and rabbit-skins; and that of hemp and flax with the fibre of several kinds of palms. In spinning they used spindles of terra-cotta, and made the cloth already noticed.

The Mexicans were very fond of amusement, and devoted considerable time to dancing, games, and other sports.

In the ordinary dances,—those intended to amuse the nobles or the higher orders of the people, which were held in their residences, those which took place in the temples as acts of devotion, and those executed in houses on the occasion of a domestic festival,—there was but a small number of partners. These formed themselves in two parallel lines and danced side by side or face to face. But in the great commemorative dances, which were performed either in the market places or on the lower step of the temple, several hundred people took part at the same time. The musicians were placed in the centre and the dancers arranged themselves in concentric circles, according to social gradation, the inner circle being assigned to those of the highest grade. Dancing was generally attended with singing. Priests, nobles, males, and females joined in these dances.

Although we have generally used the terms "tribes," "chief," etc., in speaking of the people of the civilized nations of Mexico and Central America, yet most writers, in speaking of early Mexican history, have made use of the terms "nobles," "lords," "king," etc. However, the reader must bear in mind the fact that the people of Mexico and Central America were Indians, and that these terms are used only in the sense in which they may be applied to Indians.

There was a peculiar dance that was held in great favor in Yucatan in pre-Columbian days. A pole some fifteen or twenty feet in length was planted in the ground, to the top of which were attached a number of very long cords of various colors. Each dancer took hold of one of these; then, as the musicians commenced to play, the dance began, the dancers, crossing in and out, gradually forming a symmetrical figure around the pole. As the movement was in one direction for a time, the cords were gradually wound about the pole; when they became too short, the direction of the movement was reversed and the unwinding proceeded.

There was in vogue among the Mexicans a species of amusement enacted on great feast days that was unique in character. In this performance, a tall post was fixed in the

ground, and near the top a square wooden frame was fastened by ropes, and from each corner was suspended a rope of sufficient length to reach the ground, to the end of which was suspended a man, furnished with wings and clothed to represent a bird. The ropes holding the frame having been wound up, at a signal they were allowed to unwind, which sent the persons at the ends of the four ropes whirling in the air, and at the same time gradually descending toward the ground, where they were caught by those below, thus preventing the flyers from being injured.

A kind of dance, or rather an exhibition of skill, in great favor among the Mayas, in which a large number of men took part, is thus described: The participants formed a ring, musicians playing during the performance. When the dancing began, two actors, still keeping step with the rest, came out from the ring, one holding in his hand a bunch of wands and dancing upright, while the other cowered down, but still dancing. Then the one who had the wands threw them with all the force he could command at his companion, who, with great skill, managed to parry them with a short stick. When the two had finished, they returned to their former position in the circle, and two others took their place and went through the same performance, and so on until all selected had taken part.

Besides these amusements, most of the cultured or so-called civilized nations were in the habit of performing a kind of drama, in which the plays were generally of a historical character and monotonous, otherwise burlesque. Foot-races and sham battles were also sports common among the Mexicans. "These sports," says the old Italian author, Clavigero, who spent several years in Mexico at an early day studying the history of this people, "were most useful to the state; for, besides the innocent pastime which they afforded the people, they gave agility to their [the actors'] limbs, and accustomed them to the fatigues of war." However, the game of ball was given precedence over all other sports among the civilized tribes of Mexico and

Central America, or, as Bancroft limits it, "among all the nations whose cult was similar to the Toltec."

It is somewhat singular that this game should throw a ray of light on the distant past of these nations, revealing data and explaining monuments and other survivals which would otherwise be inexplicable. Its history and description are therefore valuable to the antiquary, not only as setting forth one of the prehistoric sports of these cultured tribes, but also as throwing light on other questions.

According to Sahagun, the game was known among the Mexicans by the name *tlachtli*, and seems to have been considered under special divine protection. It was certainly practised as early as the period of Toltec supremacy; that is to say, as early as and possibly preceding the eleventh century. The place where the game was played by the Mexicans is described by Torquemada as a plain, square piece of ground about eighteen perches (three hundred feet) in length and proportionally broad, enclosed within four walls which were thicker below than above, and the side walls were built higher than the others and well whitened and polished. They were crowned all around with battlements. This description seems to be more applicable to the so-called gymnasiums of Uxmal and Chichen Itza than to any Mexican structures; at least, no remains have been found in the Aztec country corresponding thereto. There are figures in the Mexican Codices which are evidently intended to represent the playgrounds, but they do not correspond with the description of Torquemada (*Monarquia Indiana*), as they show an elongate rectangular figure with a rectangular expansion on each side at the ends.

The place was consecrated by the priests at midnight of the day preceding that on which the game was to be played, by carrying thither some idols, and performing certain ceremonies. The balls were of solid india rubber, three or four inches in diameter. The players, of whom there were two or three on a side, were naked, except the breech cloth, and sometimes a skin over the part to be touched by the

ball. The rule was to hit the ball only with the shoulder, elbow, knee, or hip, as should be agreed upon, and he who struck the ball with any part not agreed upon lost a point. The object was to send the ball against or over the wall, which counted one or more points; but in Yucatan where—as in the gymnasium at Chichen Itza—a stone ring was placed in each of the side walls, the player who drove the ball through one of these rings not only won the game for his side, but was entitled to all the cloaks of those present as spectators which he could seize before they hurried from the grounds with them. On such occasions the betting was lively, the poor, who could offer nothing else, staked ears of maize on the result, while the stakes of the rich were in proportion to their wealth. The great estimation in which the game was held in Mexico is evident from the fact that the two cities Tochtepec and Otatitlan, paid tribute to the crown of sixteen thousand balls yearly.

Although surpassed in other lines of culture by the Maya tribes, yet in government the Mexicans had made greater advance than any other North American aborigines; nevertheless, in their social organization they seem to have made but the one step forward which had also been reached by some of the northern tribes—that is they counted descent in the male instead of in the female line. The gens, or kin group, as Bandelier names it in his paper on the *Social Organization and Government of the Ancient Mexicans*, was there, as was the general rule among the native population, the unit of organization, though Payne, having reference to localization, makes the pueblo the unit. This system also prevailed among the Toltecs who, as has been shown in a previous chapter, preceded the Aztecs in the valley of Anahuac. It also prevailed among the Maya tribes and the Chiapanecs; and so far as known the functions of this social unit were substantially the same among these different tribes as among the Mexicans. In the latter the gens, or *calpulli*, had the right to elect its officers, and also the right to remove them for misbehavior. The chief authority of the

*calpulli* was lodged in a council composed of a number of old men—though the number is not stated. This body exercised criminal jurisdiction as well as civil, and attended to all grave questions affecting the gens. It elected the ruling officer or chief; and also the chief police officer, who, in war, exercised the function of chief military officer.

The Aztec tribe had, soon after it settled on the island in the lake where their city was built, divided, or probably it already consisted of four divisions, which are spoken of by the name *calpulli*, or gentes; however, as there were minor subdivisions bearing this name, these four divisions corresponded more likely to what Morgan designates "phratries." These, from the fact that there were usually four, each having its separate area or portion in the pueblo, were sometimes called "quarters." Each of these "quarters" included several of the smaller divisions or gentes, called "minor quarters." These four chief *calpulli* remained as the principal divisions of the tribe for both civil and military purposes, and the soldiers of each constituted á separate body in the nation's army.

The tribe was in one sense the aggregate of the gentes, or kinships, but it had also its particular functions. Its attributes were: First, the possession of, and right over certain territory; second, a common dialect; and third, common tribal worship. Its highest authority resided in a tribal council called in the Mexican language *tlatocan*, or "place of speech"; but named by Molina "the royal council." This council was composed of one delegate or representative from each kinship or gens, presumably the chief. As there were twenty of these subdivisions the council must have consisted of twenty members unless the four "quarters" or phratries and other special interests were represented. However, Bernal Diaz de Castillo, who accompanied Cortés, and speaks from information obtained of the former customs of the tribe, says (*Hist. verdadera*) that the council consisted of *viente grandes señores*,—"twenty great nobles." All the gentes were, without regard to

population, upon perfect equality, each, in the person of its representative, having the same rights and privileges as any other.

Notwithstanding the foregoing statement that the council consisted of twenty representatives, it is stated positively by Duran (*Historia de las Yndias*) that the four "quarters" or phratries were represented by their chiefs, and they seem to have had some official precedence in the assembly, or certain definite functions, as presiding officers, though it is probable that the right to vote on important questions was limited to the representatives of the *calpulli*. To them belonged the right to elect the "chief of men," the tribal chief, or, as the early historians were pleased to call him, king or emperor, and to those composing the respective phratries belonged, respectively, the right to elect the chief of the phratry, who was, as was also the king, chosen for life.

Bandelier asserts, in his paper on the *Social Organization and Mode of Government of the Ancient Mexicans*, that "no office itself, whether of the kin or tribe, was hereditary in any family." He adds further that "tribal society presupposes equality of rights among all the members of the kins composing the tribe. Hence, it follows that 'caste' and hereditary rank could not exist, that there could not be any division, among the ancient Mexicans, into higher and lower classes, into 'nobles' and 'common people,' or into hereditary professions or vocations, like priests, warriors, merchants, artisans, and tillers of the soil." He admits that these statements are liable to be considered too sweeping, in which respect we entirely agree with him. We admit there has been too much romance woven into the history of the ancient Mexicans, but the undeniable data do not, as we think, justify the above statements.

It was not an uncommon thing, even among the northern Indians, for a particular gens or clan of a tribe, and in some cases for a family line, to have a certain function which did not pertain to any other gens; such as the care

of the sacred fire, tribal symbols, etc. In some tribes it was the rule that the regular chief should be chosen from a particular gens. Brinton (*American Race*, 130) makes the following statement in regard to these points:

"Descent was generally reckoned in the male line, and the male children of the deceased were regarded as the natural heirs both to his property and his dignities. Where the latter, however, belonged rather to the gens than the individual, a form of election was held, the children of the deceased being given the preference. In this sense, which was the usual limitation in America, many positions were hereditary, including that of the chieftaincy of the tribe or confederation. The Montezuma who was the ruler who received Cortés was the grandson of Axayacatl, who, in turn, was the son of the first Montezuma, each of whom exercised the chief power."

We are inclined, therefore, notwithstanding the numerous quotations by Bandelier from early authorities, to agree with the views expressed by Brinton, who was equally familiar with these authorities. We may also add to Brinton's statement that, between Axayacatl and Montezuma the second, Mexico was governed in succession by two brothers of the former—Tizocic and Ahuizotl. Clavigero gives in his history of ancient Mexico (*Storia Antica del Messico*) a list of the kings subsequent thereto, proving that to the time of the last Montezuma all belonged to the one family line. And this appears to have been the rule among the Mayas, Zapotecs, and Michoacans. We feel compelled, therefore, notwithstanding our high regard for Bandelier's opinion in reference to Mexican history, to differ from him in relation to the descent or right of inheritance in particular lines.

Lands, except those intended for the use of the government, or so-called "crown lands," were not held by individual right or title but by the clan, or *calpulli*. The tribe claimed the entire territory over which its power extended; but the *calpules* held in actual possession within that territory such tracts or divisions as were productive,

and probably as were assigned to them respectively or were obtained by some agreement or understanding. The land belonging to each *calpulli*, or clan, was held by it as a unit; though laid off into minor lots which were assigned to the individual members or families for their use and cultivation; however, the individuals had no right of alienation.

There were, however, particular tracts which were devoted to certain public uses, and certain lands possessed by the "nobles" or persons high in authority, were mostly grants by the "king." These lands were not inalienable, but, if Clavigero is to be believed, the owners were prohibited from selling them to "plebeians." This certainly indicates social distinctions into classes. In the matter of inheritance the Mexicans respected the right of primogeniture; nevertheless, if the first-born son was incapable of taking care of his property, the father could choose another child on condition that he would supply the wants of the eldest; but in Tlascala, at least, daughters could not inherit property.

In Yucatan the whole country was divided into numerous estates, or domains, ruled over by "nobles" or chiefs of different ranks. Although each had, under the chief ruler, absolute sway over his domain, yet it does not appear that he was considered in any sense the owner of the lands or that he had the right to alienate them. Certain portions were set aside for his support and worked by the people in common. The rest seems to have been parcelled among the people, the first occupant being regarded, as in some sense, its owner, from whom it was handed down to his descendants from generation to generation, but without any right to sell it, and under an obligation to contribute a certain part of the products to the ruler of the domain. Whether a clan right intervened is not stated; in fact, the clan or kinship seems to have been to a great degree lost in the larger group in Yucatan.

The people of Yucatan, who belonged to the Maya tribe proper and spoke the same dialect, appear to have been

divided, for an indefinite period preceding the discovery, into four groups or chieftaincies as follows: the Cocomes, the Tutul-Xius, the Cheles, and the Itzas. Each was entirely independent of the others, and was supreme within its own territorial bounds, though they differed but little in customs, government, or religious beliefs.

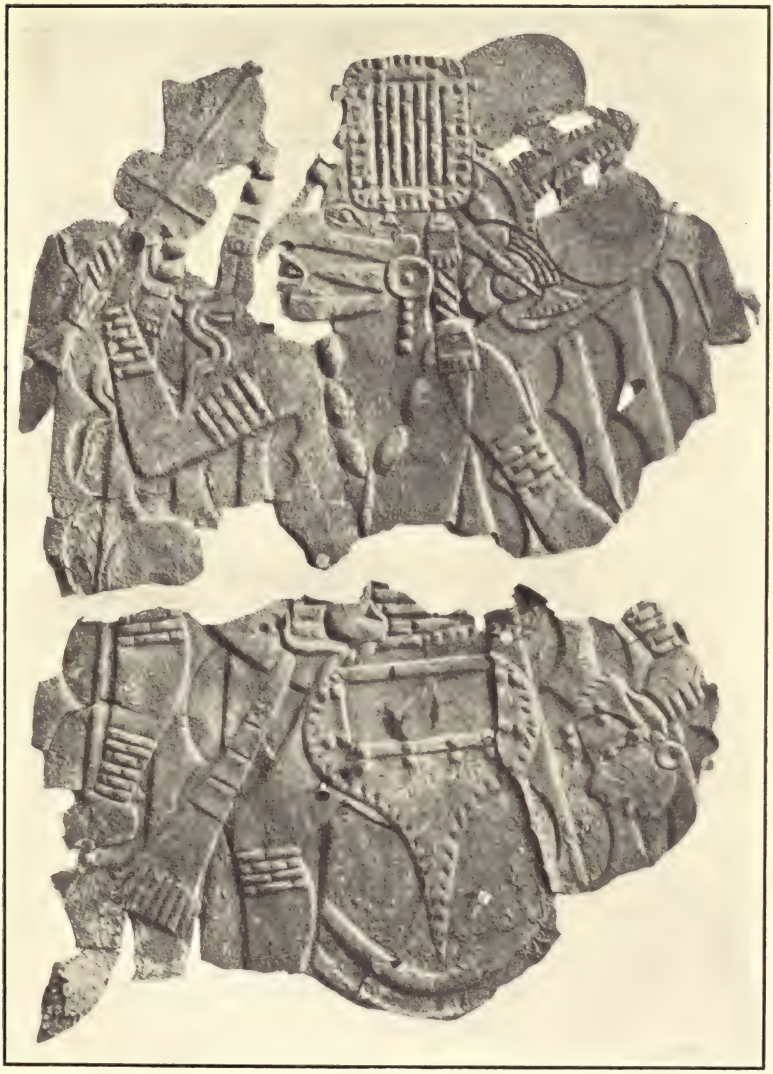
It was not the custom of the Mexicans when they conquered other tribes to absorb them into their own body politic, as did the Iroquois and Creeks, but to make them tributaries, in order to draw supplies from them usually to the full extent they were able to bear. A number of the fragmentary paintings which have been preserved, as the Humboldt series, recently published by the Bureau of American Ethnology in Bulletin 28, relate entirely to tributes, as does also the Mendoza Codex.

Some idea of the amount of this tribute may be obtained from the following statements: Some four or five cities of the Pacific coast annually contributed to the government treasury cotton cloths, four thousand bundles of colored feathers, two hundred sacks of cacao, forty ocelot skins, and one hundred and sixty birds. Three cities of the Zapotecs were taxed forty ingots of gold and twenty sacks of cochineal; and other cities, like proportions of gold dust, cotton cloths, bundles of feathers, collars of emeralds, amber, liquid amber, rubber balls, etc.

The Mexican and Central American cosmogony, as well as their mythology, has some reference, like that of other people, to their early history, but transformed by imagination and added symbolism. The hero-god is usually connected with a creation myth, a flood myth, or stories of other destructions and renewals of the world. While these cosmogonical and cataclysmical myths have more or less reference to cosmic phenomena, yet they all agree in connecting therewith a divine personage, who becomes the national culture-hero or leading deity, who is often considered the creator of the visible universe, and ancestor of the tribe, or, more commonly, the reformer and instructor

of the tribe. He is usually represented as finding the tribe in a state of savagery, living by the chase and wild vegetable foods alone, with little or no knowledge of useful arts. He brings them out of this savage condition by introducing system into their social and political organization; by teaching them the arts of life, how to cultivate the soil and to manufacture cloth. He introduces the calendar, instructs them in the sacred rites and ceremonies and religious duties, and teaches them the medicinal properties of plants. Then he leaves in some mysterious way, not by death, but by a journey, by embarking on the sea or by rising to the sky, with a promise to return at some future time.

Thus, among the Tzentals and other tribes of the Usumacinta valley in Tabasco and Chiapas, Votan, their culture-hero comes from the eastern shore, clothed, as were his followers, in long gowns. Wives are given his followers, and he is made ruler over the people, who, up to that time, had lived in a savage state, knowing nothing of agriculture or architecture. Like Quetzalcoatl, of Mexican traditions, and other hero-gods, he instructs them in these arts, forms their calendar, teaches them how to record events in hieroglyphic characters, and builds their capital city. Similar traditions are given in regard to other culture-heroes, as Quetzalcoatl, really a Toltec deity adopted into the Mexican pantheon, Itzamna and Cukulcan among the Mayas of Yucatan, and Gucumatz of the Kiches and other Maya tribes of Guatemala. The last two, whose names have the same signification as Quetzalcoatl, "feathered serpent," are supposed by some authors to be one and the same personage. By some authors and students these culture-heroes are believed to have been real human personages, who were great reformers, beloved by the people, and after death were deified and placed in the pantheon as chief deities. Other writers maintain that they are only natural phenomena, as change of seasons or alternation of night and day anthropomorphized.



Fragments of thin copper plate, *repoussé*, showing human figure, from a mound in the Etowah group, Georgia.

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To attempt to give a list of the other deities of the national pantheons and their attributes, especially of the Mexicans, would require more space than would be justified here. We can only mention Huitzilopochtli, the sanguinary Mars of the Aztec pantheon, whose favor could be gained only by human sacrifice and bleeding hearts; and the serpent goddess Coatlicue, whose horrid image is made chiefly of intercoiled serpent forms.

## CHAPTER XXIV

### *SUMMARY AND CONCLUSIONS*

RATZEL is probably right when he says: "The New World, rightly understood, has to supply the key to the greatest problems of anthropology; the reason for its decisive importance being found in its isolated position." It affords, as this author suggests, the best opportunity for, as well as the means of, deciding the question of the unity or multiplicity of the human species. Scientists have availed themselves of this opportunity, and, having found aboriginal man in America to resemble in all physical essentials man elsewhere, the problem has been solved in favor of specific unity; and this is now one of the accepted foundation stones on which anthropology and ethnology are firmly established. The discussion of the question is closed.

The unity of the species established, a necessary sequence is that man had his origin on one continent only, and migrated to the other. The generally accepted conclusion on this point is that man came into being in the Old World. A necessary sequence to this conclusion is that prehistoric man reached back in time to a more remote date in the Old than in the New World, and may have antedated his descendant in the latter by several thousand years.

Although there is agreement regarding the unity of the species *homo*, and also that there are varieties or races, the views as to the number and distinctions of these races are various. However, it is generally admitted that the

aborigines of America are racially different from the people of the other parts of the world, some authors holding that they include but one race, others that they consist of two or more. Nevertheless, the general conclusion at present is, as heretofore stated, that they constitute but one race, the Eskimo being considered a somewhat divergent group or sub-race, the remaining natives, to which the name Indian is limited, forming another sub-race.

As the theory of glacial man in North America is yet in dispute, each side counting strong supporters in its ranks, we have proceeded upon the theory that his appearance on the continent was in the postglacial era; yet we have admitted that there are some puzzling questions which arise in attempting to follow out the result of the latter theory. On the other hand, the difficulties in the way of the theory of glacial man appear to be still greater and much more difficult to overcome. Moreover, we have assumed that, supposing man to have been preglacial or interglacial, neither traditions nor any available generally admitted data obtainable reach back of the postglacial era; nor will it be possible on that theory to trace any connection between particular peoples or races of the two continents. We may therefore assume that the evolutionary processes in prehistoric times in America, which brought about the conditions found existing at the time of discovery, would have been substantially the same in either case.

Man's antiquity on the continent is not to be determined by a few adventitious finds in drift material, but by the time required for the formation of a race, for the spread of population over the entire continent from the point or points of entry, and for the development of the numerous linguistic stocks and languages. When scientists have reached with something like approximate certainty the time required for these processes, and geologists have determined the probable date of the close of the glacial era in the northwest, students will be better prepared to arrive at some conclusion as to man's antiquity in America.

On the other hand, on the theory of glacial man, we find it impossible to explain satisfactorily the general early movement southward on the Pacific side. This movement extended, as is shown by the most recent investigations, from points as far north as fifty-five or sixty degrees north latitude. If the population was driven south during the ice epoch, to what cause was due, or how are we to account for, this general movement southward in postglacial times? This southward movement belongs to the earliest period to which available data and legitimate deductions reach. Why there should have been a great movement to the northern sections after the close of the ice age, merely to be reversed, is incomprehensible with the data yet obtained.

Very recent investigations, as already mentioned, are furnishing some additional evidence of the long advocated theory of some relationship of the North American tribes, especially those of the northwestern sections, with people of northeastern Asia. Now it will be admitted that this evidence cannot reach back to the preglacial era. We have, therefore, deemed it unsafe to base any important deductions on the theory of preglacial man in North America, until more satisfactory evidence thereof has been presented.

One result of the more careful study of the data bearing on the prehistoric era has been the final shelving of many of the numerous theories advanced in the past in regard to the origin of the Indians.

That the peculiarities which distinguished the American race from the other races of the world were impressed in and were due to the physical conditions of America must be admitted, but there seems to be a tendency among the more recent investigators to minimize these racial peculiarities, though the influence of physical environment is admitted and even emphasized. No one, so far as we are aware, has followed Brinton in his idea of a particular "area of characterization."

Brinton is substantially correct in the statement that "American culture wherever examined presents a family

likeness." Not only can the leading types in art, architecture, forms, ornaments, etc., be readily distinguished in most cases from those of other parts of the world; but the boundary lines between type districts are not often sheer breaks, but usually gradual shadings from one into another. That native culture, at least in North America, pertains in the primary essentials to one general type and has in all sections developed along substantially the same general lines, we believe to be true and susceptible of demonstration. It is chiefly for the bearing it has upon this subject that we have devoted the preceding chapter to a brief discussion of the Mexican and Central American arts and industries. While we cannot admit that the culture of these sections is substantially of the same grade as that of the leading northern tribes, we do admit that it was developed out of a lower grade of the same general type. Hence, we agree with Brinton, in the general sense, that "American culture wherever examined presents a family likeness."

The weapons and implements of the Mexicans and Mayas were largely of the same types as those of the northern sections, and were superior in but few respects. The social system of the former was an outgrowth of that of the latter, differing only in grade. North America at the time of discovery was everywhere in the polished stone age; advance had been made beyond the rough stone age, but had not reached fully that of the metals. True, copper and the precious metals were widely, though not very extensively employed, chiefly for ornamental purposes; but flaked and polished stone remained the principal material used for implements. Fully three-fourths, if not a larger portion, of the tribes were acquainted with the art of pottery making; yet the potter's wheel and the method of glazing had not been discovered.

Towns, buildings, and fortifications were laid out systematically, and stone structures were built of symmetrical forms and correct proportions; but square, compass, and plumb line were unknown; and scales and weights had

not been devised. Standards or units of value, and possibly of dry or bulk measure, had come into use to some extent; but the proof is yet wanting that there were standards or units of lineal measure, unless found, as observed in a previous chapter, in the correct proportions of the parts of buildings. Commodious boats hollowed out of logs, made of bark, and of skin stretched on frames, were in use on most waters; but, strange as it may seem, the inventive faculties of their makers had not reached the idea of oars or sails to propel them, the rudder to guide them was unknown, and paddles alone were relied upon. Some statements regarding the occasional use by Caribs of a square cloth when running with the wind are not considered exceptions to the above assertion. Wind musical instruments and those sounded by percussion had been devised in considerable variety, but stringed instruments, so far as known, had not come into use.

The religious sentiment was strongly developed in most tribes, and even those in the lowest stage of culture, as well as the most advanced, had myths and propitiatory rites. There were none so low that they did not believe in a future state and in higher powers than those possessed by themselves.

In studying the American type of prehistoric culture from its lowest to its highest stage, and comparing it with the types of early culture in the eastern continent, we notice not only some striking differences in details and lines of development, but also in the general phase or character thereof in the two continents.

The horse, ass, and camel, and the cattle, sheep, and goats of the eastern continent changed very materially the lines of advance and the type of culture from that possible in the New World. Cattle and sheep gave rise to pastoral life, with all its effects upon the manners and customs of the people, and brought into use articles unknown to prehistoric America. Payne has called attention to the effect of the single article of diet, milk. "It is," he says,

"the peculiar property of milk and its products that they alone furnish the human species with a food which is not only absolutely sufficient for sustenance, but is available for use from the earliest period of existence. The consequences of this are weighty and far-reaching. In the absence of extraneous milk supplies, the human young must, even in domestic life be suckled during two or three years before it can safely be put upon other aliment. . . . It is obvious then, that the provision of constant and ample supplies of milk, by abridging and partially superseding natural lactation, enables the species at once to multiply in a greatly increased proportion."

This argument agrees with the fact that while it is the rule, in estimating families among enlightened people, to multiply the male adults by five, the proportion among the Indians is only about three and a half.

Where there were domesticated horses and oxen, there were chariots for the battlefield and the chase, and the wain and cart for transportation of those things which the natives of America carried upon their backs. Sheep, cattle, and goats not only furnished meat and milk as food, but also material for clothing, coverings, tents, and harness. Shepherds following and caring for their flocks and herds upon the plains, with ample food supply and more time for contemplation than the hunter pursuing game through the forest, turned their thoughts more to astronomy and philosophy than the latter. But it is unnecessary for us to describe in detail the differences between the manners, customs, and culture brought about by the possession in the Old World of the animals named and the manners, customs, and culture of the New World. Advance from the hunter to the pastoral stage was impossible in the latter, in prehistoric times.

Had horses and cattle, natives of America, been domesticated, what a vast difference would it have made in aboriginal travel, transportation, and commercial intercourse between the different sections. It may also be said in truth that, notwithstanding the great advance which might have

been made along certain lines, yet the natives of America could never have reached the status of true civilization without the discovery of iron and the use of the horse and cattle. Although the advance in the architectural art was remarkable as compared with that along some other lines, yet the true, or circular, arch remained unknown. This is somewhat strange, as the process of development had passed through almost all possible elementary forms, from the brush lodges of the Apaches, Paiutes, and Cocopas to the temples of the Mayas and Zapotecs built of cut stone and adorned with rich, though barbaric, sculpture. Although in the skin tent of the plains, the A-shaped grass dwellings of the Pacific coast, and some of the rectangular birch-bark lodges of the upper lake region, the vertical angle or inverted V form was used, as in the Central American structures, yet the dome-shaped and circular-roofed houses of the southern Atlantic coast of the United States and some types of lodges in the West presented the form of the circular arch. But the masons who built the stone structures of southern Mexico and Central America adopted only the former type, or the flat roof, for the coverings of their structures.

The priests and artisans had learned to paint symbolic records on paper and parchment, and to sculpture them on stone slabs and monoliths, but had failed to represent sounds by alphabetic characters. Keane (*Ethnology*, 351) says: "When it is remembered that some of these [American] cultures were the outcome of slow and independent growth on bleak or arid table-lands, developed without the aid of iron or of any more useful domestic animal than the feeble Peruvian llama, it may be doubted whether the verdict which places the more favored Mongoloid Asiatics above the American aborigines is entirely justified. It may be allowed that there is nothing in Mexico, Yucatan, or Peru comparable to the stupendous temples of Boro-Bodor and Angkor-Vat in Malaysia and Indo-China; but these structures were planned by Hindu, that is Caucasic missionaries,

and cannot be credited to the genius of the surrounding Mongoloid peoples. In respect of letters and literature, however, the superiority of the Mongol intellect cannot be questioned. Neither the Aztec nor the Maya pictorial ideographic writings, nor the Peruvian quipos, nor yet such incoherent compositions as those of the Quiche *Popul Vuh*, written after the Conquest, are in any way comparable to the libraries of moral, religious, historical, and even poetic works produced in China, Japan, Tibet, and other Mongol lands during the last 1500 or 2000 years."

While the correctness of this statement is admitted, will it also be admitted that the comparison is a fair one? Egypt and Assyria were building great temples and palaces and using alphabetic equivalents in their writings—if recent explorers are to be credited—two, three, and probably twice three thousand years before one of the pyramids or stone temples of southern Mexico or Central America was built or an inscription chiselled. In other words, it must be remembered that the Old World is older, yes, thousands of years older, so far as man is concerned, than the New World,—leaving out of consideration glacial man.

The recent and more careful study relating to the prehistoric age in North America has disposed forever of the theory of a preceding, highly civilized race by whom the mounds of the Mississippi valley and the stone structures of Mexico and Central America were built. Although sensational articles appear from time to time in the newspapers, telling of the discovery of relics of a long-vanished race which preceded the Indian, the student of American archæology no longer files these away as worthy of preservation. Anomalies are of no special value to the student of archæology; what he desires are specimens or data by which to determine types; these, and not anomalies, are the foundation stones on which conclusions must be based.

It has been the hope of archæologists to assign the respective types to their authors; that is, to decide to what stock, tribe, or group this or that type is to be attributed.

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Necklace of human fingers. *From the original in the Bureau of American Ethnology, Washington.*

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By means of the large collections and obtained data, this effort has been at least partially successful on the eastern continent, but in America, with comparatively few exceptions, types can be assigned only in a very broad or general sense. This difference is due chiefly to the greater advance in culture and the greater degree of specialization of type characters in the former. Although types have some relation to ethnic divisions in America, yet type boundaries are seldom coincident with ethnic boundaries.

There is seldom any difficulty in assigning a newly discovered codex, inscription, or statue to the proper ethnic group, as Mexican or Mayan; while on the other hand but few types of stone implements can be limited with certainty to particular ethnic groups. There are, however, some exceptions to the latter rule, as the Eskimo stone lamp, which, though borrowed to a slight extent by some neighboring tribes, is strictly an Eskimo type and has not been developed independently elsewhere in America. And so with a few other types which have been developed through special conditions of environment. Locality can, as a general rule, be determined as to types more readily than the tribe or ethnic group.

The relative distribution, even of the general types, varies widely. For example, the bow and arrow have been common throughout North America, except in one or two limited areas in the Pacific section; while the spear, including the javelin, was much more limited in its distribution. The short lance, or javelin, was used in Mexico and Central America and on the Pacific coast. De Soto's troops, in their wild march (1539–1542) through the region now embraced in the southern States, met with no natives using spears in battle until they had passed to the west of Mississippi River and entered what is now the State of Arkansas. Dr. Farrand, in his most excellent little work, *The Basis of American History*, which unfortunately was not received until we were writing this final chapter, says the longer type of weapons, "thrusting lances or spears were

apparently not common, though they were used extensively [in historic times] by the tribes of the plains, whose battles were fought on horseback" (242). The *atlatl*, or throwing stick, was limited to the areas where the short lance, or javelin, was used.

Mound building, in the comprehensive sense, was limited almost exclusively to the agricultural regions; but the leading types of construction can be assigned respectively to the larger districts, and in some few cases to minor areas, though as yet the corresponding ethnic lines have been determined in regard to but very few types. It is probable that the effigy mounds of the Wisconsin district are attributable to the tribes of the Siouan stock; those of western North Carolina, east Tennessee, Kanawha valley, and Ohio, in part, to the Cherokees; and the stone graves south of Ohio River to the Shawnees.

Classifying the culture of North America according to type and grade and geographical distribution, Farrand, in his work mentioned, has suggested the following districts or culture groups: I, The Eskimo; II, Tribes of the North Pacific Coast; III, Tribes of the Mackenzie River Basin and the High Plateaus; IV, Tribes of Columbia River and California; V, Tribes of the Plains; VI, Tribes of the Eastern Woodlands; VII, Tribes of the Southwest and of Mexico.

While this arrangement, no doubt, answered the temporary purpose that Dr. Farrand had in view, it is apparent that there is great inequality in the grouping; and one group—V, Tribes of the Plains, belongs almost wholly to historic times. Division VII includes many tribes of widely different culture, and several different stocks, and omits Central America unless, as is probable, "Mexico" is intended to include it.

Generalizing on the culture of North America in regard to the larger divisions, and especially with reference to social development, we notice that a common type of culture, of a low grade, prevails over the northern Athapascan region,

and extends southward between the Coast Range and the eastern range of the Rocky Mountains, southward to, and including the northern Shoshoni. Ferrand thinks the distinguishing features of this culture are, "extreme looseness of social organization, which stands in sharpest contrast with the close systems of the coast; lack of elaborate ceremonials; a complete change in the character of art [from that of the coast tribes]; and possibly the development of a mythology which while not very different from that of the tribes to the east, bears little resemblance to that of the northwest coast." True tribal organization was scarcely in existence in this area, and Ferrand thinks the clan system had disappeared; however, we are inclined to believe it must have existed in the early stages of the growth of the people of this section.

In the Atlantic section, east of the great plains, we find evidence not only in the monumental remains but also in the customs and institutions still in existence at the first contact with the whites of a much higher grade of culture than that described in the preceding paragraph.

Except in the northern portions where the cultivation of maize by the Indian method was impracticable on account of climatic conditions, agriculture was practised, and the products of the soil relied upon for a considerable portion of the food supply. De Soto's dependence for food, during his passage through the Gulf States, was almost wholly upon the cornfields of the natives, the animal food obtained being insufficient to maintain his army for a month. The social organization based upon the clan as the unit was brought to a greater degree of perfection in the Atlantic section (that of the Iroquois) than in any other region of North America unless that of the Aztecs formed an exception. Although the system among the Iroquois formed the most advanced example of the type, yet social organization based on the clan as the unit prevailed generally throughout the section; though tribal organization was much more systematic and regular in some groups than in others.

How far back in the past this type of organization can be traced is an inquiry which can receive no satisfactory reply from the data now obtainable. Some hint, however, on this point may be gained from the suggestions we have already made (Chapter XXI) regarding the development, migrations, and adjustment of the tribes in this section. That the systems had been developed when the tribes became sedentary and commenced building mounds may be assumed with assurance.

In culture the tribes of the Pueblo region surpassed those of the Atlantic section only in architecture, agriculture, and in textile fabrics. In agriculture they surpassed only in the greater reliance upon the products of the soil for subsistence, and in the variety of species cultivated. The cultivation of cotton and its use in forming fabrics for clothing was the most distinctive mark of advance. The use of stone and adobe in building by the Pueblo Indians, and the use of timber and earth only by tribes of the Atlantic section have been explained in a preceding chapter by the statement that timber was wanting in one case and abundant in the other. But the Indians of the Atlantic section were not ignorant of the use of stone, as a few of the walls of their fortifications were in whole or in part of the material. Stone was used extensively, as has been shown, in one type of graves; and a number of vaults in mounds were built of stone. It would seem, therefore, that the thought of or desire for permanency in dwellings did not enter the minds of the forest Indians to the same extent as among the Indians of the treeless sections. Houses and stockades destroyed by fire were soon replaced by others.

The study of prehistoric life in North America teaches certain important facts, or at least leads to conclusions which are worthy of being briefly mentioned in the closing paragraphs of this volume:

Culture reached its highest grade in North America not in the rich, alluvial forest regions of the temperate zone, nor on the margins of the great ocean bays or inlets, but in

the elevated treeless or semi-treeless plateaus of the semi-tropical and tropical regions of Mexico and Central America. It is also true that maize first came into use in the latter regions.

Another conclusion which we are compelled to accept with our present knowledge bearing on the subject is, that the advanced culture of the Mexican and Central American tribes was indigenous; that it originated and was entirely developed in North America without any exterior influence, so far as can now be ascertained. Nevertheless, we do not believe that the subject is effectually closed against further investigation.

The evidence obtained seems to justify the conclusion that the Pacific section was peopled before, and possibly several centuries in advance of, the Atlantic section. The mounds of the Mississippi valley are not so old as some, perhaps many, of the temples and other structures of Mexico and Central America now in ruins.

A conclusion which may be said to be so firmly established that few, if any, students of American archæology will hereafter question it, is that the builders of the mounds of the Atlantic section were Indians, the ancestors of the Indians occupying that section at the coming of the whites.

The various attempts to classify the Indians of America have resulted in the conviction that the only satisfactory system of classification possible with our present knowledge is that based on language. (See Appendices I and II in *The Indians of North America in Historic Times*.)

The linguistic test, together with other indications, has convinced ethnologists that the tribes of Panama, of Costa Rica (except of Nicoya peninsula), of eastern Guatemala, and of the northeastern part of Honduras, pertain to and connect more directly with the groups of the northern portion of South America than with those of North America; in other words, that the tribes of the areas mentioned belong ethnically to South America. Whether this element has pushed its way northward from the southern division, or is

a part of that southern group which had not at the time of discovery passed the Isthmus in the movement southward, must be left almost wholly to conjecture. We may add here the now well-settled conclusion that the West India Islands were originally peopled by Arawak offshoots from South America, followed later to some extent by a Carib element.

It may be stated as the general conclusion of students of American ethnology that, at the time of the discovery, the Indians of North America—with the possible exception of two or three tribes on the plains that followed the buffalo—were not nomadic, but, as a rule, were occupying well-defined areas, with sparsely settled areas between the groups.

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